



GOWANUS CANAL Age-Dating

^{210}Pb , ^{137}Cs ,
Sedimentation Rates and
Depositional Dates

Contract: 49554

Data Report Prepared
March 2007

Submitted by Linda S. Bingler
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Data Report sent to
Stephen Emsbo-Mattingly
New Fields, Inc.

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Sedimentation Rate Narrative

Completed by Linda Bingler 1/16/07

Seven cores were collected for radionuclide analysis from the Gowanus Canal in Brooklyn, NY. The sediment cores were sectioned in the field and transferred to sampling containers. The top 150 cm of the core were sectioned into 2 cm depth intervals. Deeper sections of the sediment core were sectioned into 10 cm depth intervals. The samples were shipped via overnight courier to the Battelle Marine Science Laboratory in Sequim, WA.

Lead-210 (Pb-210) was used to calculate a site-specific sedimentation rate based on its measured activity and constant rate of decay. It forms as part of the uranium-238 decay series from radium-226 (Ra-226) in rocks and its daughter product radon-222 (Rn-222), which is a noble gas. Supported or background Pb-210 is the amount generated within the crust of the Earth. Excess Pb-210 forms from the decay of Rn-222 in the atmosphere. Pb-210 quickly precipitates out of the atmosphere, is deposited on the earth's surface, and decays with a half-life of 22.3 years. If a rate of accretion is constant, the decay process results in an exponential decrease in Pb-210 activity with depth that can be used to estimate sediment age back about 100-150 years (Donnelly and Bertness, 2001).

Approximately 30 depth intervals were analyzed for Pb-210 in each sediment core. The sedimentation and deposition rates were estimated using a modified steady-state Pb-210 dating technique (Lavelle et al., 1985; Lavelle et al., 1986; Nevissi et al., 1989). This method assumes that 1) the sedimentation rate is constant, 2) the loss of Pb-210 from sediment layers occurs only by radioactive decay, and 3) mixing is confined to the surface mixed layer. The Pb-210 activity for unmeasured depth intervals was averaged using the section activity directly above and directly below the sampling interval.

The Cs-137 data were used to independently evaluate the sedimentation rate calculated using the Pb-210 data. This technique is based on historical release of Cs-137, which is a radioactive isotope by-product of nuclear weapons testing. Measurable concentrations of this isotope first appeared in the atmosphere in about 1952, peaked during 1963-64, and declined thereafter (Juracek et al., 1998). Cs-137 maxima in sediments corresponded to approximately 1960 ± 5 years. Approximately 10 depth intervals were analyzed for Cs-137 in each core.

The sedimentation rate calculated for each core was based on the Pb-210 results with two exceptions. The sedimentation rate for cores 01 and core 12 was estimated from the Cs-137 data because of anomalies in the Pb-210 profiles of these cores.

The following summary presents specific information about each sediment core.

Core 01

Percent dry weight varied from 47.9 to 86.1%. The supported (or background level) Pb-210 was 0.35 disintegrations per minute per gram (dpm/g) based on results from the bottom of the core. Overall the Pb-210 activity in this core was low and consistent with depth, therefore, the sedimentation rate was determined by back calculation based on the Cs-137 results. A sedimentation rate of 5.90 g/cm²/yr was obtained with an average accumulation rate of 4.92 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 260-270 cm. The Pb-210 and Cs-137 profiles agreed well in this core.

Core 88

Percent dry weight varied from 25.1 to 85.1%. The supported (or background level) Pb-210 was 0.49 dpm/g based on activity found in the bottom sections of the core. Overall the Pb-210 activity in this core was typical with high values in the surface sediments that decreased with depth. Using the Pb-210 results, a sedimentation rate of 2.84 g/cm²/yr was calculated with an average accumulation rate of 6.21 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 260-270 cm. The Pb-210 and Cs-137 profiles agreed well in this core.

Core 31

Percent dry weight varied from 31.9 to 68.6%. The supported (or background level) Pb-210 was 0.97 dpm/g based on activity found in the bottom sections of the core. Overall the Pb-210 activity in this core was variable, but generally decreasing with depth. Using the Pb-210 results, a sedimentation rate of 3.22 g/cm²/yr was calculated with an average accumulation rate of 5.27 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 230-240 cm. The Pb-210 and Cs-137 profiles agreed well for this core.

Core 12

Percent dry weight varied from 25.9 to 43.4%. The supported (or background level) Pb-210 was assumed to be 0.45 dpm/g based on the Cs-137 maximum in this core. Overall the Pb-210 activity in this core was inconsistent with elevated levels below 96 cm possibly due to dredge disposal. The sedimentation rate was determined by back calculation based on the Cs-137 results. A sedimentation rate of 1.08 g/cm²/yr was obtained with an average accumulation rate of 2.46 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960±5) was 108 - 110 cm. The Pb-210 and Cs-137 profiles agree well for this core.

Core 21

Percent dry weight varied from 44.1 to 75.2%. The supported (or background level) Pb-210 was assumed to be 0.40 dpm/g based on the similar Pb-210 profile of Core 87. Overall the Pb-210 activity in this core showed a decreasing trend with depth, but did not appear to reach background levels by 244 cm depth. Using the Pb-210 results, a sedimentation rate of 3.08 g/cm²/yr was obtained with an average accumulation rate of 4.60 cm/year. The Cs-137 maximum was found to be section 150-160 cm. However, this Cs-137 maximum was

inconclusive, because samples directly below this section were unavailable for analysis. The 1960 depth interval based on the sedimentation rate derived from Pb-210 was estimated to be between 160 and 213 cm depth.

Core 60B

Percent dry weight varied from 54.0 to 80.7% indicating this core was primarily sand and gravel. The radioisotopes of interest adsorb onto organic particles, therefore, the activity of Pb-210 detected was below the effective measurement range of the instrument. Cs-137 was not measured for the same reason.

Core 87

Percent dry weight varied from 25.8 to 84.9%. The supported (or background level) Pb-210 was 0.40 dpm/g based on activity found in the bottom sections of the core. The Pb-210 activity in this core decreased with depth. Using the Pb-210 results, a sedimentation rate of $1.30 \text{ g/cm}^2/\text{yr}$ was obtained with an average accumulation rate of 3.01 cm/year. The sediment depth corresponding to the Cs-137 maximum (1960 ± 5) was 108 - 122 cm. The Pb-210 and Cs-137 profiles agreed well for this core.

References

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Juracek, K.E. and Ziegler, A.C. (1998) URL: <http://ks.water.usgs.gov/Kansas/pubs/factsheets/fs.080-98.html>.

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10/26/06

**SEDIMENTATION RATES
FOR
Gowanus Canal Core 01**

Core 01		sed rate Supported Pb210 (dpm/g)= 0.35	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	Dry Weight Percent (%)	SEDIMENT AGE (years)	YEAR	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)				S = 5.90		
2527-1 R2	GC-RAD-01-000-002	0-2	1	1.33	59.5	0	2005	6.30
		2-4	3	1.01	69.6	1	2004	5.72
2527-2	GC-RAD-01-004-006	4-6	5	0.698	79.7	1	2004	5.03
		6-8	7	0.780	80.1	2	2003	4.59
2527-3	GC-RAD-01-008-010	8-10	9	0.862	80.4	2	2003	4.37
		10-12	11	1.40	71.8	3	2002	4.32
2527-4	GC-RAD-01-012-014	12-14	13	1.94	63.2	3	2002	4.42
		14-16	15	1.35	70.8	3	2002	4.51
2527-5	GC-RAD-01-016-018	16-18	17	0.756	78.4	4	2001	4.48
		18-20	19	0.656	79.7	4	2001	4.40
2527-6	GC-RAD-01-020-022	20-22	21	0.555	80.9	5	2000	4.33
		22-24	23	1.20	71.6	5	2000	4.31
2527-7	GC-RAD-01-024-026	24-26	25	1.85	62.2	6	1999	4.37
		26-28	27	1.32	69.9	6	1999	4.42
2527-8	GC-RAD-01-028-030	28-30	29	0.792	77.6	7	1998	4.42
		30-32	31	2.08	64.2	7	1998	4.43
2527-9	GC-RAD-01-032-034	32-34	33	3.36	50.8	7	1998	4.52
		34-36	35	2.15	61.6	8	1997	4.61
2527-10	GC-RAD-01-036-038	36-38	37	0.928	72.5	8	1997	4.64
		38-40	39	0.758	75.0	8	1997	4.62
2527-11	GC-RAD-01-040-042	40-42	41	0.587	77.5	9	1996	4.60
		42-44	43	0.910	71.0	9	1996	4.58
2527-12	GC-RAD-01-044-046	44-46	45	1.23	64.6	10	1995	4.60
		46-48	47	0.921	71.9	10	1995	4.62
2527-13	GC-RAD-01-048-050	48-50	49	0.610	79.2	11	1994	4.60
		50-54	52	1.75	65.5	11	1994	4.60
2527-15	GC-RAD-01-054-056	54-56	55	2.88	51.7	12	1993	4.66
		56-60	58	1.71	65.9	12	1993	4.72
2527-17	GC-RAD-01-060-062	60-62	61	0.536	80.1	13	1992	4.71
		62-66	64	0.474	78.3	14	1991	4.67
2527-19	GC-RAD-01-066-068	66-68	67	0.412	76.4	14	1991	4.63
		68-72	70	0.515	77.9	15	1990	4.60
2527-21	GC-RAD-01-072-074	72-74	73	0.618	79.3	16	1989	4.57
		74-78	76	0.944	70.4	17	1988	4.56
2527-23	GC-RAD-01-078-080	78-80	79	1.27	61.5	17	1988	4.58
		80-84	82	1.38	56.5	18	1987	4.63
2527-25	GC-RAD-01-084-086	84-86	85	1.50	51.4	18	1987	4.69
		86-90	88	0.961	65.7	19	1986	4.72
2527-27	GC-RAD-01-090-092	90-92	91	0.424	79.9	19	1986	4.72
		92-96	94	1.17	68.0	20	1985	4.72
2527-29 R2	GC-RAD-01-096-098	96-98	97	1.92	56.1	20	1985	4.74
		98-102	100	1.53	62.5	21	1984	4.77
2527-31	GC-RAD-01-102-104	102-104	103	1.13	68.9	22	1983	4.79

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 01**

Core 01		sed rate Supported Pb210 (dpm/g)= 0.35	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	Dry Weight Percent (%)	SEDIMENT AGE (years)	YEAR	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)				S = 5.90		
2527-33	GC-RAD-01-108-110	104-108	106	0.966	73.1	22	1983	4.78
		108-110	109	0.799	77.2	23	1982	4.77
		110-114	112	0.940	70.3	24	1981	4.76
2527-35	GC-RAD-01-114-116	114-116	115	1.08	63.4	24	1981	4.77
		116-120	118	1.12	63.3	25	1980	4.79
		120-122	121	1.16	63.2	25	1980	4.80
2527-37	GC-RAD-01-120-122	122-126	124	1.72	57.3	26	1979	4.83
		126-128	127	2.27	51.4	26	1979	4.87
		128-132	130	1.70	58.0	27	1978	4.90
2527-41	GC-RAD-01-132-134	132-134	133	1.12	64.6	27	1978	4.93
		134-138	136	1.40	61.3	28	1977	4.94
		138-140	139	1.68	58.1	28	1977	4.96
2527-43	GC-RAD-01-138-140	140-144	142	1.08	66.8	29	1976	4.97
		144-146	145	0.475	75.5	29	1976	4.97
		146-150	148	1.05	62.2	30	1975	4.98
2527-440	GC-ORG-01-150-160	150-160	155	1.63	48.9	31	1974	5.05
		160-180	170	1.47	56.6	33	1972	5.20
		180-190	185	1.31	64.4	35	1970	5.27
2527-443	GC-ORG-01-180-190	190-200	195	2.46	47.9	37	1968	5.33
		200-230	215	2.00	51.4	39	1966	5.51
		230-240	235	1.54	54.9	42	1963	5.65
2527-448	GC-ORG-01-230-240	240-250	145	4.57	50.6	43	1962	5.71
		250-260	255	3.43	53.9	44	1961	5.77
		260-270	165	2.28	57.2	46	1959	5.81
2527-452	GC-ORG-01-270-280	270-280	175	1.11	64.1	47	1958	5.82
		280-290	285	1.48	56.8	49	1956	5.83
		290-300	295	1.85	49.5	50	1955	5.87
2527-454	GC-ORG-01-290-300	300-310	305	1.14	50.5	51	1954	5.93
		310-320	315	0.435	51.4	53	1952	5.98
		320-328	324	3.99	52.7	54	1951	6.02
2527-456	GC-ORG-01-320-328	328-579	454	2.07	69.4	80	1925	5.66
		579-610	595	0.154	86.1	111	1894	5.37

S = sedimentation rate in g/cm²/year

Cs verification for Core 1:

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt (g)	% Dry Wt. (g)	Cs 137 dis/min/g (dry wt.)	
2527-15	GC-RAD-01-054-056	54-56	46.0	51.7	0.155	U
2527-17	GC-RAD-01-060-062	60-62	107	80.1	0.0785	
2527-21	GC-RAD-01-072-074	72-74	100	79.3	0.103	
2527-23	GC-RAD-01-078-080	78-80	72.0	61.5	0.139	
2527-19	GC-RAD-01-078-080	78-80	103	76.4	0.0699	U
2527-25 R1	GC-RAD-01-084-086	84-86	44.2	51.4	0.233	
2527-25 R2	GC-RAD-01-084-086	84-86	44.2	51.4	0.170	
2527-27	GC-RAD-01-090-092	90-92	107	79.9	0.0925	
2527-29	GC-RAD-01-096-098	96-98	43.6	56.1	0.201	
2527-31	GC-RAD-01-102-104	102-104	73.4	68.9	0.103	
2527-33	GC-RAD-01-108-110	108-110	100	77.2	0.164	
2527-35	GC-RAD-01-114-116	114-116	47.4	63.4	0.177	
2527-37	GC-RAD-01-120-122	120-122	62.3	63.2	0.195	
2527-39	GC-RAD-01-126-128	126-128	41.2	51.4	0.220	
2527-41	GC-RAD-01-132-134	132-134	81.0	64.6	0.0992	
2527-43	GC-RAD-01-138-140	138-140	38.7	58.1	0.310	
2527-45	GC-RAD-01-144-146	144-146	84.7	75.5	0.138	
2527-440	GC-ORG-01-150-160	150-160	14.3	48.9	0.528	U
2527-443	GC-ORG-01-180-190	180-190	30.7	64.4	0.374	
2527-444	GC-ORG-01-190-200	190-200	13.7	47.9	1.10	
2527-448	GC-ORG-01-230-240	230-240	14.8	54.9	0.759	
2527-449	GC-ORG-01-240-250	240-250	15.8	50.6	1.66	
2527-451 R1	GC-ORG-01-260-270	260-270	17.6	57.2	2.41	
2527-451 R2	GC-ORG-01-260-270	260-270	12.0	57.2	2.70	
2527-452	GC-ORG-01-270-280	270-280	19.4	64.1	2.20	
2527-454	GC-ORG-01-290-300	290-300	14.6	49.5	1.02	
2527-456	GC-ORG-01-310-320	310-320	15.7	51.4	1.26	
2527-457	GC-ORG-01-320-328	320-328	15.1	52.7	3.43	

Note: Bold values indicate the 1960 Cs peak activity.

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 88**

Core 88		sed rate Supported Pb210 (dpm/g)= 0.49	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	Dry Weight Percent (%)	SEDIMENT AGE (years)	YEAR S = 2.84	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-230	GC-RAD-88-004-006	0-2	1	8.48	32.0	0	2006	7.63
		2-4	3	9.15	32.9	0	2006	7.53
2527-231	GC-RAD-88-004-006	4-6	5	9.82	33.8	1	2005	7.40
		6-8	7	7.90	35.0	1	2005	7.25
2527-232	GC-RAD-88-008-010	8-10	9	5.99	36.1	1	2005	7.09
		10-12	11	7.42	34.4	2	2004	7.01
2527-233	GC-RAD-88-012-014	12-14	13	8.86	32.6	2	2004	7.03
		14-16	15	8.43	33.7	2	2004	7.06
2527-234	GC-RAD-88-016-018	16-18	17	8.00	34.8	2	2004	7.05
		18-20	19	9.33	32.2	3	2003	7.06
2527-235	GC-RAD-88-020-022	20-22	21	10.7	29.6	3	2003	7.14
		22-24	23	8.02	35.5	3	2003	7.17
2527-236	GC-RAD-88-024-026	24-26	25	5.37	41.5	4	2002	7.04
		26-28	27	5.48	37.7	4	2002	6.91
2527-237	GC-RAD-88-028-030	28-30	29	5.58	33.9	4	2002	6.89
		30-32	31	5.44	36.6	5	2001	6.87
2527-238	GC-RAD-88-032-034	32-34	33	5.29	39.2	5	2001	6.81
		34-36	35	6.79	35.2	5	2001	6.77
2527-239	GC-RAD-88-036-038	36-38	37	8.28	31.1	5	2001	6.80
		38-40	39	7.14	33.9	6	2000	6.83
2527-240	GC-RAD-88-040-042	40-42	41	6.00	36.8	6	2000	6.82
		42-44	43	6.25	36.9	6	2000	6.79
2527-241	GC-RAD-88-044-046	44-46	45	6.50	36.9	7	1999	6.77
		46-48	47	6.45	37.9	7	1999	6.74
2527-242	GC-RAD-88-048-050	48-50	49	6.40	38.8	7	1999	6.70
		50-54	51	6.30	36.0	8	1998	6.54
2527-244	GC-RAD-88-054-056	54-56	55	6.21	33.2	8	1998	6.67
		56-60	58	5.58	33.4	9	1997	6.70
2527-246	GC-RAD-88-060-062	60-62	61	4.95	33.7	9	1997	6.72
		62-66	65	4.64	36.0	10	1996	6.82
2527-248	GC-RAD-88-066-068	66-68	69	4.33	38.3	10	1996	6.90
		68-72	71	4.31	40.3	11	1995	6.74
2527-250	GC-RAD-88-072-074	72-74	73	4.29	42.2	11	1995	6.58
		74-78	76	4.49	42.0	12	1994	6.51
2527-252	GC-RAD-88-078-080	78-80	79	4.68	41.8	12	1994	6.45
		80-84	82	3.58	46.6	13	1993	6.36
2527-254	GC-RAD-88-084-086	84-86	85	2.47	51.4	14	1992	6.25
		86-90	88	3.68	48.9	14	1992	6.13
2527-256	GC-RAD-88-090-092	90-92	91	4.88	46.5	15	1991	6.04
		92-96	94	4.70	44.0	16	1990	5.99
2527-258	GC-RAD-88-096-098	96-98	97	4.51	41.5	16	1990	5.95
		98-102	100	4.66	41.9	17	1989	5.93
2527-260	GC-RAD-88-102-104	102-104	103	4.80	42.3	17	1989	5.90

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 88**

Core 88		sed rate Supported Pb210 (dpm/g)= 0.49	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	Dry Weight Percent (%)	SEDIMENT AGE (years)	YEAR S = 2.84	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-262	GC-RAD-88-108-110	104-108	105	4.94	39.6	18	1988	5.83
		108-110	109	5.09	36.9	19	1987	5.89
		110-114	112	4.34	40.8	19	1987	5.88
2527-264	GC-RAD-88-114-116	114-116	115	3.59	44.7	20	1986	5.86
		116-120	118	4.24	41.9	20	1986	5.84
		120-122	121	4.89	39.0	21	1985	5.82
2527-266	GC-RAD-88-120-122	122-126	124	4.31	38.5	21	1985	5.83
		126-128	127	3.73	38.1	22	1984	5.83
		128-132	130	4.28	39.8	22	1984	5.83
2527-270	GC-RAD-88-132-134	132-134	133	4.82	41.5	23	1983	5.82
		134-138	136	4.77	40.7	23	1983	5.81
		138-140	139	4.72	39.9	24	1982	5.80
2527-272	GC-RAD-88-138-140	140-144	142	4.56	40.5	25	1981	5.79
		144-146	145	4.39	41.1	25	1981	5.79
		146-160	153	4.24	37.7	26	1980	5.80
2527-274	GC-RAD-88-144-146	160-170	165	4.08	34.2	28	1978	5.84
		170-180	175	4.23	36.4	30	1976	5.88
		180-190	185	4.37	38.6	31	1975	5.89
2527-409 R2	GC-RAD-88-180-190	190-200	195	4.20	33.3	33	1973	5.92
		200-210	205	4.03	28.0	34	1972	5.99
		210-220	215	3.33	37.4	36	1970	6.05
2527-410	GC-RAD-88-200-210	220-230	225	2.62	46.7	38	1968	6.00
		230-240	235	2.19	48.4	40	1966	5.90
		240-250	245	1.75	50.1	42	1964	5.80
2527-412	GC-RAD-88-220-230	250-260	255	1.76	37.6	44	1962	5.75
		260-270	265	1.77	25.1	46	1960	5.81
		270-280	275	1.06	52.4	47	1959	5.79
2527-413	GC-RAD-88-240-250	280-290	285	0.340	79.6	52	1954	5.53
		290-300	295	0.587	57.6	56	1950	5.28
		300-310	305	0.833	35.6	58	1948	5.25
2527-414	GC-RAD-88-300-310	310-320	315	0.641	56.7	60	1946	5.21
		320-330	325	0.449	77.8	65	1941	5.03
		330-340	335	0.435	81.4	70	1936	4.78
2527-415	GC-RAD-88-320-330	340-350	345	0.420	85.1	76	1930	4.54
		350-485	417.5	0.430	81.4	118	1888	3.55
		485-515	500	0.249	82.4	165	1841	3.03
2527-416	GC-RAD-88-320-330							
2527-417	GC-RAD-88-320-330							
2527-418	GC-RAD-88-320-330							
2527-438	GC-SED-88 (15.9-16.9)							

S = sedimentation rate in g/cm²/year

Cs verification for Core 88:

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt (g)	% Dry Wt. (g)	<i>Cs 137</i> dis/min/g (dry wt.)
2527-258	GC-RAD-88-096-098	96-98	46.0	41.5	0.666
2527-260	GC-RAD-88-102-104	102-104	35.3	42.3	0.754
2527-262	GC-RAD-88-108-110	108-110	30.8	36.9	1.12
2527-264	GC-RAD-88-114-116	114-116	43.9	44.7	1.10
2527-266	GC-RAD-88-120-122	120-122	29.9	39.0	0.980
2527-268	GC-RAD-88-126-128	126-128	24.3	38.1	1.17
2527-270	GC-RAD-88-132-134	132-134	22.4	41.5	1.15
2527-272	GC-RAD-88-138-140	138-140	26.6	39.9	1.26
2527-274	GC-RAD-88-144-146	144-146	19.1	41.1	1.17
2527-409	GC-RAD-88-160-170	160-170	5.89	34.2	1.57
2527-410 R1	GC-RAD-88-180-190	180-190	11.4	38.6	2.55
2527-410 R2	GC-RAD-88-180-190	180-190	11.4	38.6	2.27
2527-411	GC-RAD-88-200-210	200-210	9.37	28.0	2.11
2527-412	GC-RAD-88-220-230	220-230	12.8	46.7	2.36
2527-413	GC-RAD-88-240-250	240-250	17.4	50.1	1.86
2527-414	GC-RAD-88-260-270	260-270	10.6	25.1	3.31
2527-415	GC-RAD-88-280-290	280-290	35.0	79.6	0.303
2527-416	GC-RAD-88-300-310	300-310	7.13	35.6	0.994
2527-417	GC-RAD-88-320-330	320-330	42.4	77.8	0.125 U
2527-418	GC-RAD-88-340-350	340-350	53.1	85.1	0.0828 U
2527-438	GC-SED-88 (15.9-16.9)	485-515	58.0	82.4	0.125 U

Note: Bold values indicate the 1960 Cs peak activity.

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 31**

Core 31		sed rate Supported Pb210 (dpm/g)= 0.97	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR S = 3.22	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-276	GC-RAD-31-004-006	0-2	1	6.46	31.9	0	2006	8.69
		2-4	3	5.49	37.8	0	2006	7.98
2527-277	GC-RAD-31-004-006	4-6	5	4.52	43.6	1	2005	7.13
		6-8	7	4.30	45.7	1	2005	6.52
2527-278	GC-RAD-31-008-010	8-10	9	4.07	47.7	1	2005	6.12
		10-12	11	4.68	46.7	2	2004	5.86
2527-279	GC-RAD-31-012-014	12-14	13	5.29	45.8	2	2004	5.73
		14-16	15	6.12	44.6	3	2003	5.67
2527-280	GC-RAD-31-016-018	16-18	17	6.94	43.5	3	2003	5.64
		18-20	19	7.20	43.1	3	2003	5.64
2527-281	GC-RAD-31-020-022	20-22	21	7.46	42.8	4	2002	5.65
		22-24	23	6.73	43.3	4	2002	5.65
2527-282	GC-RAD-31-024-026	24-26	25	5.99	43.8	4	2002	5.65
		26-28	27	6.22	43.1	5	2001	5.64
2527-283	GC-RAD-31-028-030	28-30	29	6.45	42.5	5	2001	5.65
		30-32	31	5.19	47.0	6	2000	5.63
2527-284	GC-RAD-31-032-034	32-34	33	3.92	51.4	6	2000	5.56
		34-36	35	4.38	53.6	6	2000	5.45
2527-285	GC-RAD-31-036-038	36-38	37	4.84	55.8	7	1999	5.34
		38-40	39	5.45	52.3	7	1999	5.25
2527-286	GC-RAD-31-040-042	40-42	41	6.05	48.9	8	1998	5.21
		42-44	43	4.55	52.7	8	1998	5.17
2527-287	GC-RAD-31-044-046	44-46	45	3.04	56.5	9	1997	5.10
		46-48	47	3.39	56.2	9	1997	5.02
2527-288	GC-RAD-31-048-050	48-50	49	3.74	56.0	10	1996	4.95
		50-54	51	2.72	56.6	11	1995	4.77
2527-290	GC-RAD-31-054-056	54-56	55	1.70	57.2	12	1994	4.78
		56-60	58	2.08	56.5	12	1994	4.71
2527-292	GC-RAD-31-060-062	60-62	61	2.47	55.8	13	1993	4.65
		62-66	65	2.76	49.8	14	1992	4.71
2527-294	GC-RAD-31-066-068	66-68	67	3.05	43.7	14	1992	4.64
		68-72	71	2.74	47.7	15	1991	4.73
2527-296	GC-RAD-31-072-074	72-74	73	2.43	51.6	16	1990	4.66
		74-78	76	2.35	50.6	16	1990	4.65
2527-298	GC-RAD-31-078-080	78-80	79	2.27	49.5	17	1989	4.65
		80-84	82	2.75	49.4	18	1988	4.65
2527-300	GC-RAD-31-084-086	84-86	85	3.22	49.2	18	1988	4.64
		86-90	88	2.90	50.0	19	1987	4.64
2527-302	GC-RAD-31-090-092	90-92	91	2.58	50.7	20	1986	4.64
		92-96	94	2.96	48.9	20	1986	4.64
2527-304	GC-RAD-31-096-098	96-98	97	3.35	47.0	21	1985	4.64
		98-102	100	4.20	42.6	21	1985	4.66
2527-306	GC-RAD-31-102-104	102-104	103	5.05	38.1	22	1984	4.69

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 31**

Core 31		sed rate Supported Pb210 (dpm/g)= 0.97	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)					S = 3.22	
2527-308	GC-RAD-31-108-110	104-108	105	4.92	37.2	22	1984	4.69
		108-110	109	4.78	36.3	23	1983	4.78
		110-114	112	4.68	36.3	23	1983	4.82
2527-310	GC-RAD-31-114-116	114-116	115	4.57	36.3	24	1982	4.87
		116-120	118	4.54	36.6	24	1982	4.91
		120-122	121	4.51	36.9	24	1982	4.95
2527-312	GC-RAD-31-120-122	122-126	124	4.65	35.7	25	1981	4.99
		126-128	127	4.78	34.5	25	1981	5.03
		128-132	130	4.61	34.7	26	1980	5.07
2527-314	GC-RAD-31-126-128	132-134	133	4.44	35.0	26	1980	5.11
		134-138	136	4.17	34.9	26	1980	5.14
		138-140	139	3.89	34.8	27	1979	5.18
2527-316	GC-RAD-31-132-134	140-144	142	4.40	33.6	27	1979	5.22
		144-146	145	4.90	32.4	28	1978	5.26
		146-150	148	5.41	35.1	28	1978	5.30
2527-318	GC-RAD-31-138-140	150-160	155	5.93	37.9	29	1977	5.36
		160-170	165	6.14	40.6	30	1976	5.41
		170-180	175	6.36	43.4	32	1974	5.44
2527-320	GC-RAD-31-144-146	180-190	185	5.38	43.6	34	1972	5.45
		190-200	195	4.40	43.8	36	1970	5.45
		200-210	205	4.19	47.2	38	1968	5.44
2527-426	GC-RAD-31-150-160	210-220	215	3.99	50.6	40	1966	5.40
		220-230	225	4.48	45.7	42	1964	5.37
		230-240	235	4.98	40.8	44	1962	5.38
2527-427	GC-RAD-31-170-180	240-250	245	4.68	43.1	45	1961	5.40
		250-260	255	4.38	45.4	47	1959	5.40
		260-270	265	3.53	49.1	49	1957	5.38
2527-428	GC-RAD-31-190-200	270-280	275	2.68	52.8	52	1954	5.34
		280-290	285	1.97	56.1	54	1952	5.27
		290-300	295	1.27	59.5	57	1949	5.19
2527-429	GC-RAD-31-210-220	300-310	305	1.13	56.0	60	1946	5.12
		310-320	315	1.00	52.6	62	1944	5.07
		320-330	325	1.02	60.6	65	1941	5.02
2527-430	GC-RAD-31-230-240	330-340	335	1.05	68.6	68	1938	4.92

S = sedimentation rate in g/cm²/year

Cs verification for Core 31:

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt (g)	% Dry Wt. (g)	<i>Cs 137</i> dis/min/g (dry wt.)
2527-304	GC-RAD-31-096-098	96-98	33.5	47.0	1.01
2527-306	GC-RAD-31-102-104	102-104	22.1	38.1	1.10
2527-308	GC-RAD-31-108-110	108-110	23.00	36.3	1.28
2527-310	GC-RAD-31-114-116	114-116	19.9	36.3	1.45
2527-312	GC-RAD-31-120-122	120-122	29.9	36.9	0.957
2527-314	GC-RAD-31-126-128	126-128	20.4	34.5	1.41
2527-316	GC-RAD-31-132-134	132-134	24.39	35.0	1.17
2527-318	GC-RAD-31-138-140	138-140	14.79	34.8	1.41
2527-320	GC-RAD-31-144-146	144-146	19.1	32.4	1.44
2527-426 R1	GC-RAD-31-150-160	150-160	13.5	37.9	0.548
2527-426 R2	GC-RAD-31-150-160	150-160	13.5	37.9	0.350 U
2527-427	GC-RAD-31-170-180	170-180	25.5	43.4	0.661
2527-428	GC-RAD-31-190-200	190-200	15.9	43.8	1.73
2527-429	GC-RAD-31-210-220	210-220	15.2	50.6	1.39
2527-430	GC-RAD-31-230-240	230-240	5.05	40.8	2.29
2527-431	GC-RAD-31-250-260	250-260	4.57	45.4	1.85
2527-432	GC-RAD-31-270-280	270-280	11.7	52.8	1.41
2527-433	GC-RAD-31-290-300	290-300	17.2	59.5	0.454
2527-434	GC-RAD-31-310-320	310-320	11.1	52.6	0.274 U
2527-435	GC-RAD-31-330-340	330-340	23.8	68.6	0.324

Note: Bold values indicate the 1960 Cs peak activity.

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 12**

Core 12		sed rate Supported Pb210 (dpm/g)= 0.45	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR S = 1.08	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-46	GC-RAD-12-000-002	0-2	1	4.96	35.1	0	2006	2.55
		2-4	3	5.01	35.9	1	2005	2.52
2527-47	GC-RAD-12-004-006	4-6	5	5.07	36.8	2	2004	2.48
		6-8	7	5.21	34.9	3	2003	2.48
2527-48	GC-RAD-12-008-010	8-10	9	5.34	33.0	4	2002	2.52
		10-12	11	5.80	35.6	4	2002	2.54
2527-49	GC-RAD-12-012-014	12-14	13	6.26	38.2	5	2001	2.52
		14-16	15	4.68	38.5	6	2000	2.48
2527-50	GC-RAD-12-016-018	16-18	17	3.10	38.9	7	1999	2.44
		18-20	19	4.02	35.0	8	1998	2.44
2527-51	GC-RAD-12-020-022	20-22	21	4.94	31.1	9	1997	2.46
		22-24	23	5.46	30.9	9	1997	2.50
2527-52	GC-RAD-12-024-026	24-26	25	5.98	30.8	10	1996	2.54
		26-28	27	6.59	31.9	11	1995	2.57
2527-53	GC-RAD-12-028-030	28-30	29	7.20	33.1	11	1995	2.59
		30-32	31	6.86	35.4	12	1994	2.59
2527-54	GC-RAD-12-032-034	32-34	33	6.52	37.7	13	1993	2.58
		34-36	35	7.06	37.3	14	1992	2.56
2527-55	GC-RAD-12-036-038	36-38	37	7.59	36.9	15	1991	2.55
		38-40	39	7.44	36.3	15	1991	2.54
2527-56	GC-RAD-12-040-042	40-42	41	7.28	35.8	16	1990	2.54
		42-44	43	6.78	39.6	17	1989	2.53
2527-57	GC-RAD-12-044-046	44-46	45	6.28	43.4	18	1988	2.50
		46-48	47	6.74	41.6	19	1987	2.47
2527-58	GC-RAD-12-048-050	48-50	49	7.21	39.8	20	1986	2.45
		50-54	52	7.17	37.8	21	1985	2.43
2527-60	GC-RAD-12-054-056	54-56	55	7.13	35.8	23	1983	2.43
		56-60	58	6.66	36.5	24	1982	2.43
2527-62	GC-RAD-12-060-062	60-62	61	6.18	37.2	25	1981	2.43
		62-66	64	5.98	38.2	26	1980	2.42
2527-64	GC-RAD-12-066-068	66-68	67	5.78	39.3	28	1978	2.41
		68-72	71	5.59	38.5	29	1977	2.44
2527-66	GC-RAD-12-072-074	72-74	73	5.41	37.7	30	1976	2.40
		74-78	76	6.81	38.5	32	1974	2.39
2527-68	GC-RAD-12-078-080	78-80	79	8.22	39.3	33	1973	2.38
		80-84	82	7.43	38.8	35	1971	2.38
2527-70	GC-RAD-12-084-086	84-86	85	6.63	38.2	36	1970	2.37
		86-90	88	4.18	40.5	37	1969	2.36
2527-72	GC-RAD-12-090-092	90-92	91	1.73	42.9	39	1967	2.35
		92-96	94	8.39	38.8	40	1966	2.34
2527-74	GC-RAD-12-096-098	96-98	97	15.1	34.7	41	1965	2.34
		98-102	100	13.7	33.9	43	1963	2.35
2527-76	GC-RAD-12-102-104	102-104	103	12.4	33.0	44	1962	2.36

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 12**

Core 12		sed rate Supported Pb210 (dpm/g)= 0.45	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR S = 1.08	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-78	GC-RAD-12-108-110	104-108	106	10.3	29.5	45	1961	2.37
		108-110	109	8.21	25.9	46	1960	2.39
		110-114	112	11.7	29.4	46	1960	2.41
2527-80	GC-RAD-12-114-116	114-116	115	15.1	33.0	47	1959	2.43
		116-120	118	15.2	32.1	48	1958	2.44
2527-82	GC-RAD-12-120-122	120-122	121	15.3	31.3	49	1957	2.45
		122-126	124	14.8	32.6	51	1955	2.45
2527-84	GC-RAD-12-126-128	126-128	127	14.2	33.8	52	1954	2.46
		128-132	130	15.2	33.8	53	1953	2.47
2527-86	GC-RAD-12-132-134	132-134	133	16.2	33.8	54	1952	2.47
		134-138	136	13.9	34.0	55	1951	2.47
2527-88	GC-RAD-12-138-140	138-140	139	11.7	34.2	56	1950	2.48
		140-144	142	13.4	33.3	57	1949	2.48
2527-90	GC-RAD-12-144-146	144-146	145	15.2	32.3	58	1948	2.49

S = sedimentation rate in g/cm²/year

Cs verification for Core 12:

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt (g)	% Dry Wt. (g)	<i>Cs 137</i> dis/min/g (dry wt.)
2527-56	GC-RAD-12-040-042	40-42	26.5	35.8	0.377
2527-57	GC-RAD-12-044-046	44-46	35.6	43.4	0.614
2527-58	GC-RAD-12-048-050	48-50	31.7	39.8	0.604
2527-60	GC-RAD-12-054-056	54-56	25.3	35.8	0.722
2527-62	GC-RAD-12-060-062	60-62	37.5	37.2	0.483
2527-64	GC-RAD-12-066-068	66-68	40.6	39.3	0.568
2527-66	GC-RAD-12-072-074	72-74	35.1	37.7	0.331
2527-68	GC-RAD-12-078-080	78-80	37.7	39.3	0.467
2527-70	GC-RAD-12-084-086	84-86	28.2	38.2	0.521
2527-72	GC-RAD-12-090-092	90-92	31.0	42.9	0.418
2527-74	GC-RAD-12-096-098	96-98	21.4	34.7	0.620
2527-76	GC-RAD-12-102-104	102-104	23.4	33.0	0.797
2527-78	GC-RAD-12-108-110	108-110	3.39	25.9	1.40
2527-80	GC-RAD-12-114-116	114-116	24.9	33.0	0.483
2527-82	GC-RAD-12-120-122	120-122	21.7	31.3	0.630

Note: Bold values indicate the 1960 Cs peak activity.

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 21**

Core 21		sed rate Supported Pb210 (dpm/g)= 0.40	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR S = 3.08	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-92	GC-RAD-21-000-002	0-2	1	6.18	44.1	0	2006	5.23
		2-4	3	6.52	45.0	1	2005	5.18
2527-93	GC-RAD-21-004-006	4-6	5	6.87	46.0	1	2005	5.10
		6-8	7	6.92	47.2	1	2005	5.02
2527-94	GC-RAD-21-008-010	8-10	9	6.97	48.5	2	2004	4.93
		10-12	11	6.79	47.3	2	2004	4.87
2527-95	GC-RAD-21-012-014	12-14	13	6.61	46.0	3	2003	4.86
		14-16	15	6.57	47.1	3	2003	4.86
2527-96	GC-RAD-21-016-018	16-18	17	6.53	48.1	4	2002	4.83
		18-20	19	6.11	48.4	4	2002	4.80
2527-97	GC-RAD-21-020-022	20-22	21	5.70	48.7	4	2002	4.78
		22-24	23	5.44	48.2	5	2001	4.75
2527-98	GC-RAD-21-024-026	24-26	25	5.17	47.7	5	2001	4.74
		26-28	27	4.49	47.2	6	2000	4.74
2527-99	GC-RAD-21-028-030	28-30	29	3.82	46.6	6	2000	4.74
		30-32	31	3.91	47.7	7	1999	4.74
2527-100	GC-RAD-21-032-034	32-34	33	3.99	48.8	7	1999	4.73
		34-36	35	4.72	48.5	7	1999	4.72
2527-101	GC-RAD-21-036-038	36-38	37	5.45	48.3	8	1998	4.71
		38-44	39	5.17	47.1	8	1998	4.70
2527-103	GC-RAD-21-044-046	44-46	45	4.90	45.9	9	1997	4.94
		46-54	50	4.39	47.1	11	1995	4.73
2527-106	GC-RAD-21-054-056	54-56	55	3.88	48.2	12	1994	4.73
		56-60	58	3.84	51.5	12	1994	4.71
2527-108	GC-RAD-21-060-062	60-62	61	3.79	54.8	13	1993	4.67
		62-66	64	4.00	53.1	14	1992	4.62
2527-110	GC-RAD-21-066-068	66-68	67	4.21	51.5	15	1991	4.59
		68-72	70	4.62	50.9	15	1991	4.57
2527-112	GC-RAD-21-072-074	72-74	73	5.02	50.4	16	1990	4.56
		74-78	76	4.12	53.1	17	1989	4.53
2527-114	GC-RAD-21-078-080	78-80	79	3.22	55.9	18	1988	4.50
		80-84	82	2.85	53.0	18	1988	4.47
2527-116	GC-RAD-21-084-086	84-86	85	2.47	50.2	19	1987	4.46
		86-90	88	4.17	50.3	20	1986	4.45
2527-118	GC-RAD-21-090-092	90-92	91	5.87	50.5	20	1986	4.45
		92-96	94	5.32	50.7	21	1985	4.44
2527-120	GC-RAD-21-096-098	96-98	97	4.77	50.9	22	1984	4.43
		98-102	100	4.87	49.8	23	1983	4.43
2527-122	GC-RAD-21-102-104	102-104	103	4.97	48.7	23	1983	4.43
		104-120	112	4.74	48.9	25	1981	4.43
2527-128	GC-RAD-21-120-122	120-122	121	4.51	49.1	27	1979	4.44
		122-132	127	4.16	51.2	29	1977	4.43
2527-132	GC-RAD-21-132-134	132-134	133	3.80	53.3	30	1976	4.41

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 21**

Core 21		sed rate Supported Pb210 (dpm/g)= 0.40	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR S = 3.08	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)						
2527-134	GC-RAD-21-138-140	134-138	136	4.08	58.9	31	1975	4.39
		138-140	139	4.36	64.5	32	1974	4.35
		140-144	142	4.28	59.6	33	1973	4.31
2527-136	GC-RAD-21-144-146	144-146	145	4.19	54.7	34	1972	4.29
		146-150	148	3.92	51.7	35	1971	4.29
2527-458	GC-ORG-21-150-160	150-160	155	3.64	48.6	36	1970	4.29
		160-213	187	2.19	61.9	46	1960	4.07
2527-437	GC-SED-21B (7-8)	213-244	229	0.735	75.2	61	1945	3.72

S = sedimentation rate in g/cm²/year

Cs verification for Core 21:

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt (g)	% Dry Wt. (g)	<i>Cs 137</i> dis/min/g (dry wt.)
2527-122	GC-RAD-21-102-104	102-104	44.0	48.7	0.704
2527-124	GC-RAD-21-108-110	108-110	46.7	49.1	0.705
2527-128	GC-RAD-21-120-122	120-122	46.7	49.1	0.889
2527-132	GC-RAD-21-132-134	132-134	48.4	53.3	0.898
2527-134	GC-RAD-21-138-140	138-140	45.0	64.5	1.01
2527-136	GC-RAD-21-144-146	144-146	59.9	54.7	0.669
2527-458	GC-ORG-21-150-160	150-160	16.5	48.6	1.39
2527-437	GC-SED-21B (7-8)	213-244	30.0	75.2	0.577

Note: Bold values indicate the 1960 Cs peak activity.

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**SEDIMENTATION RATES
FOR
Gowanus Canal Core 87**

Core 87		sed rate			Time	SEDIMENT		Sediment
		Supported Pb210 (dpm/g)= 0.40	Mean	Corrected		AGE		Accumulation
Sample #	Sponsor code	Segment Depth (cm)	Depth (cm)	Pb 210 (dpm/g)	% Dry	(years)	YEAR	Rate (cm/yr)
						S = 1.30		
2527-138	GC-RAD-87-000-002	0-2	1	9.35	27.4	0	2006	4.32
		2-4	3	8.67	28.9	1	2005	4.22
2527-139	GC-RAD-87-004-006	4-6	5	7.99	30.4	1	2005	4.08
		6-8	7	10.8	28.1	2	2004	4.04
2527-140	GC-RAD-87-008-010	8-10	9	13.6	25.8	2	2004	4.12
		10-12	11	10.3	26.7	3	2003	4.20
2527-141	GC-RAD-87-012-014	12-14	13	6.96	27.5	3	2003	4.23
		14-16	15	7.14	29.9	4	2002	4.21
2527-142	GC-RAD-87-016-018	16-18	17	7.31	32.4	4	2002	4.13
		18-20	19	7.15	31.3	5	2001	4.06
2527-143	GC-RAD-87-020-022	20-22	21	6.98	30.3	5	2001	4.02
		22-24	23	6.54	34.1	6	2000	3.96
2527-144	GC-RAD-87-024-026	24-26	25	6.09	37.9	6	2000	3.86
		26-28	27	7.00	37.1	7	1999	3.75
2527-145	GC-RAD-87-028-030	28-30	29	7.91	36.3	8	1998	3.68
		30-32	31	6.63	38.4	9	1997	3.61
2527-146	GC-RAD-87-032-034	32-34	33	5.34	40.5	9	1997	3.52
		34-36	35	5.04	40.8	10	1996	3.44
2527-147	GC-RAD-87-036-038	36-38	37	4.74	41.0	11	1995	3.37
		38-40	39	4.75	39.4	12	1994	3.31
2527-148	GC-RAD-87-040-042	40-42	41	4.76	37.9	13	1993	3.28
		42-44	43	4.54	36.2	13	1993	3.25
2527-149	GC-RAD-87-044-046	44-46	45	4.32	34.5	14	1992	3.24
		46-48	47	4.11	37.2	15	1991	3.23
2527-150	GC-RAD-87-048-050	48-50	49	3.89	39.9	15	1991	3.21
		50-54	51	4.10	40.6	16	1990	3.16
2527-152	GC-RAD-87-054-056	54-56	55	4.30	41.4	18	1988	3.11
		56-60	58	3.51	41.8	19	1987	3.06
2527-154	GC-RAD-87-060-062	60-62	61	2.72	42.1	20	1986	3.02
		62-66	65	2.72	42.4	21	1985	2.98
2527-156	GC-RAD-87-066-068	66-68	67	2.72	42.7	23	1983	2.94
		68-72	71	2.66	43.2	24	1982	2.91
2527-158	GC-RAD-87-072-074	72-74	73	2.59	43.6	25	1981	2.88
		74-78	76	2.50	43.6	27	1979	2.85
2527-160	GC-RAD-87-078-080	78-80	79	2.41	43.5	28	1978	2.82
		80-84	82	2.40	43.8	29	1977	2.79
2527-162	GC-RAD-87-084-086	84-86	85	2.39	44.1	31	1975	2.77
		86-90	88	2.29	44.5	32	1974	2.74
2527-164	GC-RAD-87-090-092	90-92	91	2.19	44.9	33	1973	2.72
		92-96	94	2.06	44.7	35	1971	2.70
2527-166	GC-RAD-87-096-098	96-98	97	1.94	44.5	36	1970	2.68
		98-102	100	2.29	43.4	37	1969	2.67
2527-168	GC-RAD-87-102-104	102-104	103	2.64	42.4	38	1968	2.68

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**SEDIMENTATION RATES
 FOR
 Gowanus Canal Core 87**

10/26/06

Core 87		sed rate Supported Pb210 (dpm/g)= 0.40	Mean Depth (cm)	Time Corrected Pb 210 (dpm/g)	% Dry	SEDIMENT AGE (years)	YEAR	Sediment Accumulation Rate (cm/yr)
Sample #	Sponsor code	Segment Depth (cm)					S = 1.30	
2527-170	GC-RAD-87-108-110	104-108	105	2.89	42.5	40	1966	2.64
		108-110	109	3.13	42.7	41	1965	2.63
		110-114	112	3.59	44.0	43	1963	2.62
2527-172	GC-RAD-87-114-116	114-116	115	4.04	45.3	44	1962	2.61
		116-120	118	3.48	45.2	46	1960	2.59
2527-174	GC-RAD-87-120-122	120-122	121	2.92	45.0	47	1959	2.58
		122-126	124	2.72	45.9	48	1958	2.56
2527-176	GC-RAD-87-126-128	126-128	127	2.51	46.7	50	1956	2.55
		128-132	130	2.48	46.2	51	1955	2.54
2527-178	GC-RAD-87-132-134	132-134	133	2.44	45.8	53	1953	2.52
		134-138	136	2.61	45.6	54	1952	2.51
2527-180	GC-RAD-87-138-140	138-140	139	2.78	45.4	56	1950	2.50
		140-144	142	2.69	45.5	57	1949	2.49
2527-182	GC-RAD-87-144-146	144-146	145	2.59	45.7	58	1948	2.48
		146-160	153	2.25	40.6	62	1944	2.48
2527-419	GC-RAD-87-160-170	160-170	165	1.90	35.5	66	1940	2.49
		170-180	175	1.78	32.7	69	1937	2.53
2527-420	GC-RAD-87-180-190	180-190	185	1.66	29.8	72	1934	2.57
		190-200	195	1.26	37.8	75	1931	2.60
2527-421	GC-RAD-87-200-210	200-210	205	0.865	45.8	79	1927	2.58
		210-220	215	0.691	65.3	86	1920	2.50
2527-422	GC-RAD-87-220-230	220-230	225	0.516	84.9	97	1909	2.32
		230-240	235	0.693	74.7	109	1897	2.16
2527-423	GC-RAD-87-240-250	240-250	245	0.869	64.5	118	1888	2.07
		250-260	255	0.624	70.7	127	1879	2.00
2527-424	GC-RAD-87-260-270	260-270	265	0.379	76.9	138	1868	1.93
		270-280	275	0.401	77.4	149	1857	1.85
2527-425	GC-RAD-87-280-290	280-290	285	0.422	77.9	160	1846	1.78

S = sedimentation rate in g/cm²/year

Cs verification for Core 87:

BATTELLE CODE	SPONSOR CODE	Depth (cm)	Dry Wt % (g)	Dry Wt. (g)	<i>Cs 137</i> dis/min/g (dry wt.)
2527-156	GC-RAD-87-066-068	66-68	30.7	42.7	1.68
2527-158	GC-RAD-87-072-074	72-74	24.4	43.6	0.732
2527-160	GC-RAD-87-078-080	78-80	40.5	56.5	0.768
2527-162	GC-RAD-87-084-086	84-86	32.7	44.1	1.09
2527-164	GC-RAD-87-090-092	90-92	32.6	44.9	0.690
2527-166	GC-RAD-87-096-098	96-98	25.2	44.5	0.646
2527-168	GC-RAD-87-102-104	102-104	30.9	42.4	0.696
2527-170	GC-RAD-87-108-110	108-110	33.0	42.7	1.12
2527-172 R1	GC-RAD-87-114-116	114-116	38.8	45.3	0.907
2527-172 R2	GC-RAD-87-114-116	114-116	38.8	45.3	0.960
2527-174	GC-RAD-87-120-122	120-122	33.6	45.0	1.15
2527-176	GC-RAD-87-126-128	126-128	41.3	46.7	0.715
2527-178	GC-RAD-87-132-134	132-134	34.4	45.8	0.641
2527-180	GC-RAD-87-138-140	138-140	30.4	45.4	0.614
2527-182	GC-RAD-87-144-146	144-146	35.5	45.7	0.779
2527-419	GC-RAD-87-160-170	160-170	17.2	35.5	0.280 U
2527-420	GC-RAD-87-180-190	180-190	14.5	29.8	0.482 U
2527-421	GC-RAD-87-200-210	200-210	22.4	45.8	0.229 U
2527-422	GC-RAD-87-220-230	220-230	58.5	84.9	0.121 U
2527-423	GC-RAD-87-240-250	240-250	34.7	64.5	0.163 U

Deposition Dates

Radiogenic Core	Near	Chemistry Sample Depth Interval (ft)				BAP Conc (mg/kg)		Depositional Dates	Comments
		Top - ft.	Top - cm	Bottom - ft.	Bottom - cm	STL	NF		
1	Top of Canal	1 16 19	30.5 488 579	2.5 17 20	76.2 518 610	1.5 39 871		1998-1989 1925 1894	Complete
88	6th Street Basin	0.5 9.9 15.9	15.2 302 485	1 10.4 16.9	30.5 317 515	34 471 251	62	2004-2002 1948-1946 1841	Complete
31	Citizens	2.5 11.5 16.5	76.2 351 503	4.5 12.5 18	137 381 549	20 380J 381	18	1990-1980 1923 1846	Complete
12	Fulton	0 13	0 396	2 14	61.0 427	13 43	22	2006-1982 1826	Complete
60D	Metropolitan	0 6.8 13.8	0 207 421	2.5 8 14.4	76.2 244 439	140 160J <0.039	140	NA NA NA	Sed rates not calculable
21	Between Citizens and Fulton	1.5 7	45.7 213	3 8	91.4 244	35 12	16	1997-1986 1945	Complete
Alternatives 87	4th Street Basin	4.4 12.7 19	134 387 579	6.2 13.3 20	189 405 610	40J 21 <0.078	44	1952-1934 1909 1829	Complete
78	Home Depot	0 2.5	0 76.2	1 5	30.5 152	5.3 14J	11	NA NA	Not needed

QA/QC NARRATIVE

PROJECT: GEI Cores 01, 88, 31, 12, 21, 60B, and 87
PARAMETER: Radionuclide Analysis: ^{210}Pb
LABORATORY: Battelle Marine Sciences Laboratory, Sequim, Washington
MATRIX: Sediment
Includes samples 2527*1-13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 440, 443, 444, 448, 449, 451, 452, 454, 456, 457, 436, 230-242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 409-418, 438, 276-288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 426-435, 46-60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92-104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 458, 437, 368-380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 138-150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 419-425

SAMPLE CUSTODY AND PROCESSING: Two hundred forty three sediment samples were freeze-dried, digested and counted by alpha spectroscopy for ^{210}Pb .

DATA QUALITY OBJECTIVES: ^{210}Pb Check Standard Accuracy: $\leq 30\%$ PD
Replicate Precision (Duplicate): $\leq 30\%$ RPD

METHOD: Analysis of sediment samples for ^{210}Pb was conducted according to Battelle SOP MSL-C-012, *^{210}Pb Dating Digestion and Analysis*. An approximate 3-g aliquot of each dry sediment sample was removed for acid digestion and plated onto a small metal disk. Polonium-208 is added to each sample during processing as an internal standard. The disks are counted individually using a Tennelec TC 256 Si (Li) alpha particle spectrometer, Model 7401. Samples were counted for approximately 24 hours each. After counting and calculations, sample results are reported as ^{210}Pb activity in units of disintegrations per minute per gram.

CHECK STANDARD ACCURACY: A minimum of one ^{210}Pb check standard was analyzed with each batch of 33 samples or less. The results of the check standard analyses were 16, 4, 3 (core 01), 6, 28, 8, 3 (core 88), 9, 31, 4, (core 31), 31, 6 (core 12), 6, 28, 3 (core 21), 25, 3 (core 60B), 19, 8, and 14 (core 87) percent difference (PD) and were within the QC acceptance criteria of 30% PD, except one check sample for core 31 and 12. Samples analyzed with that check sample were flagged as estimates with a "#". Other QC analyzed with those samples were within acceptable criteria, therefore, no further corrective action was taken.

REPLICATE PRECISION: A minimum of one sample was analyzed in duplicate with each batch of 33 samples or less. Precision of duplicate analysis, expressed as the relative percent difference (RPD) of replicate results, were 17, 17, (core 01), 11, 10, 3, 8 (core 88), 0, 18, 10 (core 31), 9, 9, (core 12), 21, 6 (core 21), 24 (core 60B), 8, and 3% (core 87) and were within the QC acceptance criteria of 30% RPD.

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Gowanus Canal Core 1
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	5.65	16%	*
2527-1 R1	GC-RAD-01-000-002	0-2	1	59.5	1.44		
2527-1 R2	GC-RAD-01-000-002	0-2	1	59.5	1.21	17%	@
2527-2	GC-RAD-01-004-006	4-6	5	79.7	0.698		
2527-3	GC-RAD-01-008-010	8-10	9	80.4	0.862		
2527-4	GC-RAD-01-012-014	12-14	13	63.2	1.94		
2527-5	GC-RAD-01-016-018	16-18	17	78.4	0.756		
2527-6	GC-RAD-01-020-022	20-22	21	80.9	0.555		
2527-7	GC-RAD-01-024-026	24-26	25	62.2	1.85		
2527-8	GC-RAD-01-028-030	28-30	29	77.6	0.792		
2527-9	GC-RAD-01-032-034	32-34	33	50.8	3.36		
2527-10	GC-RAD-01-036-038	36-38	37	72.5	0.928		
2527-11	GC-RAD-01-040-042	40-42	41	77.5	0.587		
2527-12	GC-RAD-01-044-046	44-46	45	64.6	1.23		
2527-13	GC-RAD-01-048-050	48-50	49	79.2	0.610		
2527-15	GC-RAD-01-054-056	54-56	55	51.7	2.88		
2527-17	GC-RAD-01-060-062	60-62	61	80.1	0.536		
2527-19	GC-RAD-01-066-068	66-68	67	76.4	0.412		
2527-21	GC-RAD-01-072-074	72-74	73	79.3	0.628		
2527-23	GC-RAD-01-078-080	78-80	79	61.5	1.27		
2527-25	GC-RAD-01-084-086	84-86	85	51.4	1.50		
2527-27	GC-RAD-01-090-092	90-92	91	79.9	0.424		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.44	4%	*
2527-29 R1	GC-RAD-01-096-098	96-98	97	56.1	2.08		
2527-29 R2	GC-RAD-01-096-098	96-98	97	56.1	1.76	17%	@
2527-31	GC-RAD-01-102-104	102-104	103	68.9	1.13		
2527-33	GC-RAD-01-108-110	108-110	109	77.2	0.799		
2527-35	GC-RAD-01-114-116	114-116	115	63.4	1.08		
2527-37	GC-RAD-01-120-122	120-122	121	63.2	1.16		
2527-39	GC-RAD-01-126-128	126-128	127	51.4	2.27		
2527-41	GC-RAD-01-132-134	132-134	133	64.6	1.12		
2527-43	GC-RAD-01-138-140	138-140	139	58.1	1.68		
2527-45	GC-RAD-01-144-146	144-146	145	75.5	0.475		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.90	3%	*
2527-440	GC-ORG-01-150-160	150-160	155	48.9	1.63		
2527-443	GC-ORG-01-180-190	180-190	185	64.4	1.31		
2527-444	GC-ORG-01-190-200	190-200	195	47.9	2.46		
2527-448	GC-ORG-01-230-240	230-240	235	54.9	1.54		
2527-449	GC-ORG-01-240-250	240-250	245	50.6	4.57		
2527-451	GC-ORG-01-260-270	260-270	265	57.2	2.28		
2527-452	GC-ORG-01-270-280	270-280	275	64.1	1.11		
2527-454	GC-ORG-01-290-300	290-300	295	49.5	1.85		
2527-456	GC-ORG-01-310-320	310-320	315	51.4	0.435		
2527-457	GC-ORG-01-320-328	320-328	324	52.7	3.99		
2527-436	GC-SED-01 (19-20)	579-610	595	86.1	0.154		

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

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8/14/06

Gowanus Canal Core 88
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	7.12	6%	*
2527-230 R1	GC-RAD-88-000-002	0-2	1	32.0	8.02		
2527-230 R2	GC-RAD-88-004-006	0-2	1	32.0	8.94	11%	@
2527-231	GC-RAD-88-004-006	4-6	5	33.8	9.82		
2527-232	GC-RAD-88-008-010	8-10	9	36.1	5.99		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	8.61	28%	*
2527-233 R1	GC-RAD-88-012-014	12-14	13	32.6	8.42		
2527-233 R2	GC-RAD-88-012-014	16-18	17	32.6	9.29	10%	@
2527-234	GC-RAD-88-016-018	16-18	17	34.8	8.00		
2527-235	GC-RAD-88-020-022	20-22	21	29.6	10.7		
2527-236	GC-RAD-88-024-026	24-26	25	41.5	5.37		
2527-237	GC-RAD-88-028-030	28-30	29	33.9	5.58		
2527-238	GC-RAD-88-032-034	32-34	33	39.2	5.29		
2527-239	GC-RAD-88-036-038	36-38	37	31.1	8.28		
2527-240	GC-RAD-88-040-042	40-42	41	36.8	6.00		
2527-241	GC-RAD-88-044-046	44-46	45	36.9	6.50		
2527-242	GC-RAD-88-048-050	48-50	49	38.8	6.40		
2527-244	GC-RAD-88-054-056	54-56	55	33.2	6.21		
2527-246	GC-RAD-88-060-062	60-62	61	33.7	4.95		
2527-248	GC-RAD-88-066-068	66-68	67	38.3	4.33		
2527-250	GC-RAD-88-072-074	72-74	73	42.2	4.29		
2527-252	GC-RAD-88-078-080	78-80	79	41.8	4.68		
2527-254	GC-RAD-88-084-086	84-86	85	51.4	2.47		
2527-256	GC-RAD-88-090-092	90-92	91	46.5	4.88		
2527-258	GC-RAD-88-096-098	96-98	97	41.5	4.51		
2527-260	GC-RAD-88-102-104	102-104	103	42.3	4.80		
2527-262	GC-RAD-88-108-110	108-110	109	36.9	5.09		
2527-264	GC-RAD-88-114-116	114-116	115	44.7	3.59		
2527-266	GC-RAD-88-120-122	120-122	121	39.0	4.89		
2527-268	GC-RAD-88-126-128	126-128	127	38.1	3.73		
2527-270	GC-RAD-88-132-134	132-134	133	41.5	4.82		
2527-272	GC-RAD-88-138-140	138-140	139	39.9	4.72		
2527-274	GC-RAD-88-144-146	144-146	145	41.1	4.39		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	7.26	8%	*
2527-409 R1	GC-RAD-88-160-170	160-170	165	34.2	4.02		
2527-409 R2	GC-RAD-88-160-170	160-170	165	34.2	4.14	3%	@
2527-410	GC-RAD-88-180-190	180-190	185	38.6	4.37		
2527-411	GC-RAD-88-200-210	200-210	205	28.0	4.03		
2527-412	GC-RAD-88-220-230	220-230	225	46.7	2.62		
2527-413	GC-RAD-88-240-250	240-250	245	50.1	1.75		
2527-414	GC-RAD-88-260-270	260-270	265	25.1	1.77		
2527-415	GC-RAD-88-280-290	280-290	285	79.6	0.340		
2527-416	GC-RAD-88-300-310	300-310	305	35.6	0.833		
2527-417 R1	GC-RAD-88-320-330	320-330	325	77.8	0.449		
2527-417 R2	GC-RAD-88-320-330	320-330	325	77.8	0.414	8%	@
2527-418	GC-RAD-88-340-350	340-350	345	85.1	0.420		

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Gowanus Canal Core 88
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY	
					Pb210 dpm/g	RPD (%)
BLANK	N/A	N/A	N/A	N/A	0.000	
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000	
CHECK STD	N/A	N/A	N/A	N/A	6.90	3%
2527-438	GC-SED-88 (15.9-16.9)	485-515	500	82.4	0.249	

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

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Gowanus Canal Core 31
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.08	9%	*
2527-276 R1	GC-RAD-31-000-002	0-2	1	31.9	6.46		
2527-276 R2	GC-RAD-31-004-006	0-2	1	31.9	6.46	0%	@
2527-277	GC-RAD-31-004-006	4-6	5	43.6	4.52		
2527-278	GC-RAD-31-008-010	8-10	9	47.7	4.07		
2527-279	GC-RAD-31-012-014	12-14	13	45.8	5.29		
2527-280	GC-RAD-31-016-018	16-18	17	43.5	6.94		
2527-281	GC-RAD-31-020-022	20-22	21	42.8	7.46		
2527-282	GC-RAD-31-024-026	24-26	25	43.8	5.99		
2527-283	GC-RAD-31-028-030	28-30	29	42.5	6.45		
2527-284	GC-RAD-31-032-034	32-34	33	51.4	3.92		
2527-285	GC-RAD-31-036-038	36-38	37	55.8	4.84		
2527-286	GC-RAD-31-040-042	40-42	41	48.9	6.05		
2527-287	GC-RAD-31-044-046	44-46	45	56.5	3.04		
2527-288	GC-RAD-31-048-050	48-50	49	56.0	3.74		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	4.64	31%	*
2527-290 R1	GC-RAD-31-054-056	54-56	55	57.2	1.55		#
2527-290 R2	GC-RAD-31-054-056	54-56	55	57.2	1.85	18%	@#
2527-292	GC-RAD-31-060-062	60-62	61	55.8	2.47		#
2527-294	GC-RAD-31-066-068	66-68	67	43.7	3.05		#
2527-296	GC-RAD-31-072-074	72-74	73	51.6	2.43		#
2527-298	GC-RAD-31-078-080	78-80	79	49.5	2.27		#
2527-300	GC-RAD-31-084-086	84-86	85	49.2	3.22		#
2527-302	GC-RAD-31-090-092	90-92	91	50.7	2.58		#
2527-304	GC-RAD-31-096-098	96-98	97	47.0	3.35		#
2527-306	GC-RAD-31-102-104	102-104	103	38.1	5.05		#
2527-308	GC-RAD-31-108-110	108-110	109	36.3	4.78		#
2527-310	GC-RAD-31-114-116	114-116	115	36.3	4.57		#
2527-312	GC-RAD-31-120-122	120-122	121	36.9	4.51		#
2527-314	GC-RAD-31-126-128	126-128	127	34.5	4.78		#
2527-316	GC-RAD-31-132-134	132-134	133	35.0	4.44		#
2527-318	GC-RAD-31-138-140	138-140	139	34.8	3.89		#
2527-320	GC-RAD-31-144-146	144-146	145	32.4	4.90		#
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.45	4%	*
2527-426 R1	GC-RAD-31-150-160	150-160	155	37.9	6.22		
2527-426 R2	GC-RAD-31-150-160	150-160	155	37.9	5.63		
2527-427	GC-RAD-31-170-180	170-180	175	43.4	6.36		
2527-428	GC-RAD-31-190-200	190-200	195	43.8	4.40		
2527-429	GC-RAD-31-210-220	210-220	215	50.6	3.99		
2527-430	GC-RAD-31-230-240	230-240	235	40.8	4.98		
2527-431	GC-RAD-31-250-260	250-260	255	45.4	4.38		
2527-432	GC-RAD-31-270-280	270-280	275	52.8	2.68		
2527-433	GC-RAD-31-290-300	290-300	295	59.5	1.27		
2527-434	GC-RAD-31-310-320	310-320	315	52.6	1.00		
2527-435	GC-RAD-31-330-340	330-340	335	68.6	1.05		

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

= Data should be considered estimates due to criteria exceedance for check sample.

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Gowanus Canal Core 12
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	4.64	31%	*
2527-46 R1	GC-RAD-12-000-002	0-2	1	35.1	5.18		#
2527-46 R2	GC-RAD-12-000-002	0-2	1	35.1	4.73	9%	@#
2527-47	GC-RAD-12-004-006	4-6	5	36.8	5.07		#
2527-48	GC-RAD-12-008-010	8-10	9	33.0	5.34		#
2527-49	GC-RAD-12-012-014	12-14	13	38.2	6.26		#
2527-50	GC-RAD-12-016-018	16-18	17	38.9	3.10		#
2527-51	GC-RAD-12-020-022	20-22	21	31.1	4.94		#
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.32	6%	*
2527-52	GC-RAD-12-024-026	24-26	25	30.8	5.98		
2527-53	GC-RAD-12-028-030	28-30	29	33.1	7.20		
2527-54	GC-RAD-12-032-034	32-34	33	37.7	6.52		
2527-55	GC-RAD-12-036-038	36-38	37	36.9	7.59		
2527-56	GC-RAD-12-040-042	40-42	41	35.8	7.28		
2527-57	GC-RAD-12-044-046	44-46	45	43.4	6.28		
2527-58	GC-RAD-12-048-050	48-50	49	39.8	7.21		
2527-60	GC-RAD-12-054-056	54-56	55	35.8	7.13		
2527-62	GC-RAD-12-060-062	60-62	61	37.2	6.18		
2527-64	GC-RAD-12-066-068	66-68	67	39.3	5.78		
2527-66 R1	GC-RAD-12-072-074	72-74	73	37.7	5.66		
2527-66 R2	GC-RAD-12-072-074	72-74	73	37.7	5.15	9%	@
2527-68	GC-RAD-12-078-080	78-80	79	39.3	8.22		
2527-70	GC-RAD-12-084-086	84-86	85	38.2	6.63		
2527-72	GC-RAD-12-090-092	90-92	91	42.9	1.73		
2527-74	GC-RAD-12-096-098	96-98	97	34.7	15.1		
2527-76	GC-RAD-12-102-104	102-104	103	33.0	12.4		
2527-78	GC-RAD-12-108-110	108-110	109	25.9	8.21		
2527-80	GC-RAD-12-114-116	114-116	115	33.0	15.1		
2527-82	GC-RAD-12-120-122	120-122	121	31.3	15.3		
2527-84	GC-RAD-12-126-128	126-128	127	33.8	14.3		
2527-86	GC-RAD-12-132-134	132-134	133	33.8	16.2		
2527-88	GC-RAD-12-138-140	138-140	139	34.2	11.7		
2527-90	GC-RAD-12-144-146	144-146	145	32.3	15.2		

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

= Data should be considered estimates due to criteria exceedance for check sample.

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8/14/06

Gowanus Canal Core 21
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.32	6%	*
2527-92 R1	GC-RAD-21-000-002	0-2	1	44.1	5.53		
2527-92 R2	GC-RAD-21-000-002	0-2	1	44.1	6.83	21%	@
2527-93	GC-RAD-21-004-006	4-6	5	46.0	6.87		
2527-94	GC-RAD-21-008-010	8-10	9	48.5	6.97		
2527-95	GC-RAD-21-012-014	12-14	13	46.0	6.61		
2527-96	GC-RAD-21-016-018	16-18	17	48.1	6.53		
2527-97	GC-RAD-21-020-022	20-22	21	48.7	5.70		
2527-98	GC-RAD-21-024-026	24-26	25	47.7	5.17		
2527-99	GC-RAD-21-028-030	28-30	29	46.6	3.82		
2527-100	GC-RAD-21-032-034	32-34	33	48.8	3.99		
2527-101	GC-RAD-21-036-038	36-38	37	48.3	5.45		
2527-102	GC-RAD-21-040-042	40-42	41	70.7	0.898		
2527-103	GC-RAD-21-044-046	44-46	45	45.9	4.90		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	8.58	28%	*
2527-104 R1	GC-RAD-21-048-050	48-50	49	65.3	6.88		
2527-104 R2	GC-RAD-21-048-050	48-50	49	65.3	6.49		
2527-106	GC-RAD-21-054-056	54-56	55	48.2	3.88		
2527-108	GC-RAD-21-060-062	60-62	61	54.8	3.79		
2527-110	GC-RAD-21-066-068	66-68	67	51.5	4.21		
2527-112	GC-RAD-21-072-074	72-74	73	50.4	5.02		
2527-114	GC-RAD-21-078-080	78-80	79	55.9	3.22		
2527-116	GC-RAD-21-084-086	84-86	85	50.2	2.47		
2527-118	GC-RAD-21-090-092	90-92	91	50.5	5.87		
2527-120	GC-RAD-21-096-098	96-98	97	50.9	4.77		
2527-122	GC-RAD-21-102-104	102-104	103	48.7	4.97		
2527-124	GC-RAD-21-108-110	108-110	109	50.5	6.69		
2527-126	GC-RAD-21-114-116	114-116	115	55.8	1.39		
2527-128	GC-RAD-21-120-122	120-122	121	49.1	4.51		
2527-130	GC-RAD-21-126-128	126-128	127	67.0	1.44		
2527-132	GC-RAD-21-132-134	132-134	133	53.3	3.80		
2527-134	GC-RAD-21-138-140	138-140	139	64.5	4.36		
2527-136	GC-RAD-21-144-146	144-146	145	54.7	4.19		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	6.90	3%	*
2527-458	GC-ORG-21-150-160	150-160	155	48.6	3.64		
2527-437	GC-SED-21B (7-8)	213-244	229	75.2	0.735		

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

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Gowanus Canal Core 60B
Pb-210 RESULTS IN SEDIMENT
Results in disintegrations/minute/gram (dpm/g)

8/14/06

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		
CHECK STD	N/A	N/A	N/A	NA	8.41	25%	*
2527-368 R1	GC-RAD-60B-000-002	0-2	1	64.5	0.950		
2527-368 R2	GC-RAD-60B-000-002	0-2	1	64.5	0.746	24%	@
2527-369	GC-RAD-60B-004-006	4-6	5	71.9	0.332		
2527-370	GC-RAD-60B-008-010	8-10	9	69.4	0.349		
2527-371	GC-RAD-60B-012-014	12-14	13	70.2	0.302		
2527-372	GC-RAD-60B-016-018	16-18	17	75.1	0.194		
2527-373	GC-RAD-60B-020-022	20-22	21	78.8	0.157		
2527-374	GC-RAD-60B-024-026	24-26	25	80.5	0.180		
2527-375	GC-RAD-60B-028-030	28-30	29	80.7	0.186		
2527-376	GC-RAD-60B-032-034	32-34	33	80.6	0.134		
2527-377	GC-RAD-60B-036-038	36-38	37	77.9	0.153		
2527-378	GC-RAD-60B-040-042	40-42	41	77.5	0.169		
2527-379	GC-RAD-60B-044-046	44-46	45	77.9	0.204		
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		
CHECK STD	N/A	N/A	N/A	NA	6.90	3%	*
2527-380	GC-RAD-60B-048-050	48+50	49	79.5	0.179		
2527-382	GC-RAD-60B-054-056	54+56	55	74.3	0.259		
2527-384	GC-RAD-60B-060-062	60-62	61	69.7	0.528		
2527-386	GC-RAD-60B-066-068	66-68	67	58.2	0.302		
2527-388	GC-RAD-60B-072-074	72-74	73	63.7	0.757		
2527-390	GC-RAD-60B-078-080	78-80	79	58.9	1.17		
2527-392	GC-RAD-60B-084-086	84-86	85	57.4	0.896		
2527-394	GC-RAD-60B-090-092	90-92	91	66.6	0.527		
2527-396	GC-RAD-60B-096-098	96-98	97	67.0	0.470		
2527-398	GC-RAD-60B-102-104	102-104	103	74.1	0.605		
2527-400	GC-RAD-60B-108-110	108-110	109	70.1	0.475		
2527-402	GC-RAD-60B-114-116	114-116	115	78.8	0.390		
2527-404	GC-RAD-60B-120-122	120-122	121	55.6	0.671		
2527-406	GC-RAD-60B-126-128	126-128	127	55.6	0.589		
2527-408	GC-RAD-60B-132-134	132-134	133	54.0	0.612		

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

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Gowanus Canal Core 87
Pb-210 RESULTS IN SEDIMENT

Results in disintegrations/minute/gram (dpm/g)

Project 2527

BATTELLE CODE	SPONSOR ID	Depth (cm)	Mean Depth cm	Percent Dry Weight (g)	ACTIVITY Pb210 dpm/g	RPD (%)	
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		
CHECK STD	N/A	N/A	N/A	NA	5.42	19%	*
2527-138 R1	GC-RAD-87-000-002	0-2	1	27.4	8.99		
2527-138 R2	GC-RAD-87-000-002	0-2	1	27.4	9.70	8%	@
2527-139	GC-RAD-87-004-006	4-6	5	30.4	7.99		
2527-140	GC-RAD-87-008-010	8-10	9	25.8	13.6		
2527-141	GC-RAD-87-012-014	12-14	13	27.5	6.96		
2527-142	GC-RAD-87-016-018	16-18	17	32.4	7.31		
2527-143	GC-RAD-87-020-022	20-22	21	30.3	6.98		
2527-144	GC-RAD-87-024-026	24-26	25	37.9	6.09		
2527-145	GC-RAD-87-028-030	28-30	29	36.3	7.91		
2527-146	GC-RAD-87-032-034	32-34	33	40.5	5.34		
2527-147	GC-RAD-87-036-038	36-38	37	41.0	4.74		
2527-148	GC-RAD-87-040-042	40-42	41	37.9	4.76		
2527-149	GC-RAD-87-044-046	44-46	45	34.5	4.32		
BLANK	N/A	N/A	N/A	NA	0.000		
BLANK SPIKE	N/A	N/A	N/A	NA	0.000		
CHECK STD	N/A	N/A	N/A	NA	7.26	8%	*
2527-150 R1	GC-RAD-87-048-050	48+50	49	39.9	3.83		
2527-150 R2	GC-RAD-87-048-050	48+50	49	39.9	3.94	3%	@
2527-152	GC-RAD-87-054-056	54+56	55	41.4	4.30		
2527-154	GC-RAD-87-060-062	60-62	61	42.1	2.72		
2527-156	GC-RAD-87-066-068	66-68	67	42.7	2.72		
2527-158	GC-RAD-87-072-074	72-74	73	43.6	2.59		
2527-160	GC-RAD-87-078-080	78-80	79	43.5	2.41		
2527-162	GC-RAD-87-084-086	84-86	85	44.1	2.39		
2527-164	GC-RAD-87-090-092	90-92	91	44.9	2.19		
2527-166	GC-RAD-87-096-098	96-98	97	44.5	1.94		
2527-168	GC-RAD-87-102-104	102-104	103	42.4	2.64		
2527-170	GC-RAD-87-108-110	108-110	109	42.7	3.13		
2527-172	GC-RAD-87-114-116	114-116	115	45.3	4.04		
2527-174	GC-RAD-87-120-122	120-122	121	45.0	2.92		
2527-176	GC-RAD-87-126-128	126-128	127	46.7	2.51		
2527-178	GC-RAD-87-132-134	132-134	133	45.8	2.44		
2527-180	GC-RAD-87-138-140	138-140	139	45.4	2.78		
2527-182	GC-RAD-87-144-146	144-146	145	45.7	2.59		
BLANK	N/A	N/A	N/A	N/A	0.000		
BLANK SPIKE	N/A	N/A	N/A	N/A	0.000		
CHECK STD	N/A	N/A	N/A	N/A	5.78	14%	*
2527-419	GC-RAD-87-160-170	160-170	165	35.5	1.90		
2527-420	GC-RAD-87-180-190	180-190	185	29.8	1.66		
2527-421	GC-RAD-87-200-210	200-210	205	45.8	0.865		
2527-422	GC-RAD-87-220-230	220-230	225	84.9	0.516		
2527-423	GC-RAD-87-240-250	240-250	245	64.5	0.869		
2527-424	GC-RAD-87-260-270	260-270	265	76.9	0.379		
2527-425	GC-RAD-87-280-290	280-290	285	77.9	0.422		

@ = RPD

* = % difference

Check Standard known value = 6.71 dpm/g

Cs-137 Results

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QA/QC NARRATIVE

PROJECT: GEI Cores 01, 88, 31, 12, 21, 87
PARAMETER: Radionuclide Analysis: ^{137}Cs
LABORATORY: Battelle Marine Sciences Laboratory, Sequim, Washington
MATRIX: Sediment
Includes samples
2527*15, 17, 21, 23, 19, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 440, 443, 444, 448-452, 454, 456, 457, 56-58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 122, 124, 128, 132, 134, 136, 458, 437, 304, 306, 308, 310, 312, 314, 316, 318, 320, 426—435, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 419-423, 258, 260, 262, 264, 266, 268, 270, 272, 274, 409-418, 438

SAMPLE CUSTODY AND PROCESSING: One hundred fourteen samples were freeze-dried and counted by gamma spectroscopy for ^{137}Cs .

DATA QUALITY OBJECTIVES: ^{137}Cs Check Standard Accuracy: $\leq 30\%$ PD
Replicate Precision (Duplicate): $\leq 30\%$ RPD

METHOD: Analysis of sediment samples for gamma-emitting isotopes such as ^{137}Cs was conducted according to Battelle SOP MSL-C-013, *Analyses of ^{137}Cs and other Gamma Emitting Isotopes by Gamma Counting*. Samples were counted using a Canberra Series 40 MCA gamma counter for approximately 12 - 24 hours each. After counting and calculations, sample results are reported as ^{137}Cs activity in units of disintegrations per minute per gram.

DETECTION LIMIT: The detection limit is defined as three times the square root of the background counts and is calculated for each sample.

STANDARD DISK COUNTS: A ^{137}Cs standard disk was counted to set the instrument channels for the region of interest around the ^{137}Cs peak. Counts from the ^{137}Cs standard disk were also used in the calculation of the ^{137}Cs decay rate.

CHECK STANDARD ACCURACY: Check standard IAEA 135 was analyzed initially and approximately every 20 samples analyzed. Results of check standard analyses were 13, 23, 9, 9, 9, 11, 9, and 11 percent difference (PD) and were within the QC acceptance criteria of $\pm 30\%$ PD.

REPLICATE PRECISION: One replicate sample was counted for each batch of samples. Results were 31, 11, NA (not calculable due to a value less than the DL), 6, and 12 relative percent difference. Sample 2527-25 had a precision of 31% that exceeds our default criteria of $\pm 30\%$, however the sample results were near the level of detection for the instrument. Other calculable recoveries were within the criteria of $\pm 30\%$ RPD.

**Cs-137 Results in Sediments
GOWANUS**

Samples received 1/24-31/06

Results reported in disintegrations/minute/gram

PROJECT: 2527

BATTELLE CODE	Core ID	SPONSOR CODE	Depth (cm)	Dry Wt. (g)	Percent Dry Wt. (g)	Cs137 detection limit (dis/min/g)	Cs 137 dis/min/g (dry wt.)	SRM CERTIFIED VALUE dis/min/g	%RPD	
Core 01										
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.389	42.6	48.8	13%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.362	37.8	48.8	23%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.379	44.3	48.8	9%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.608	44.4	48.8	9%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.649	44.6	48.8	9%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.425	43.6	48.8	11%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.433	44.3	48.8	9%	*
IAEA-135	NA	IAEA 135	NA	11.0	NA	0.450	43.6	48.8	11%	*
2527-15	NA	GC-RAD-01-054-056	54-56	46.0	51.7	0.155	0.155 U			
2527-17	NA	GC-RAD-01-060-062	60-62	107	80.1	0.047	0.0785			
2527-21	NA	GC-RAD-01-072-074	72-74	100	79.3	0.053	0.103			
2527-23	NA	GC-RAD-01-078-080	78-80	72.0	61.5	0.100	0.139			
2527-19	NA	GC-RAD-01-078-080	78-80	103	76.4	0.070	0.0699 U			
2527-25 R1	NA	GC-RAD-01-084-086	84-86	44.2	51.4	0.111	0.233			
2527-25 R2	NA	GC-RAD-01-084-086	84-86	44.2	51.4	0.110	0.170		31%	#
2527-27	NA	GC-RAD-01-090-092	90-92	107	79.9	0.068	0.0925			
2527-29	NA	GC-RAD-01-096-098	96-98	43.6	56.1	0.116	0.201			
2527-31	NA	GC-RAD-01-102-104	102-104	73.4	68.9	0.060	0.103			
2527-33	NA	GC-RAD-01-108-110	108-110	100	77.2	0.073	0.164			
2527-35	NA	GC-RAD-01-114-116	114-116	47.4	63.4	0.102	0.177			
2527-37	NA	GC-RAD-01-120-122	120-122	62.3	63.2	0.110	0.195			
2527-39	NA	GC-RAD-01-126-128	126-128	41.2	51.4	0.122	0.220			
2527-41	NA	GC-RAD-01-132-134	132-134	81.0	64.6	0.086	0.0992			
2527-43	NA	GC-RAD-01-138-140	138-140	38.7	58.1	0.171	0.310			
2527-45	NA	GC-RAD-01-144-146	144-146	84.7	75.5	0.074	0.138			
2527-440	NA	GC-ORG-01-150-160	150-160	14.3	48.9	0.528	0.528 U			
2527-443	NA	GC-ORG-01-180-190	180-190	30.7	64.4	0.162	0.374			
2527-444	NA	GC-ORG-01-190-200	190-200	13.7	47.9	0.477	1.10			
2527-448	NA	GC-ORG-01-230-240	230-240	14.8	54.9	0.330	0.759			
2527-449	NA	GC-ORG-01-240-250	240-250	15.8	50.6	0.407	1.66			
2527-451 R1	NA	GC-ORG-01-260-270	260-270	17.6	57.2	0.377	2.41			
2527-451 R2	NA	GC-ORG-01-260-270	260-270	12.0	57.2	0.648	2.70		11%	
2527-452	NA	GC-ORG-01-270-280	270-280	19.4	64.1	0.355	2.20			
2527-454	NA	GC-ORG-01-290-300	290-300	14.6	49.5	0.322	1.02			
2527-456	NA	GC-ORG-01-310-320	310-320	15.7	51.4	0.245	1.26			
2527-457	NA	GC-ORG-01-320-328	320-328	15.1	52.7	0.341	3.43			
Core 12										
2527-56	NA	GC-RAD-12-040-042	40-42	26.5	35.8	0.280	0.377			
2527-57	NA	GC-RAD-12-044-046	44-46	35.6	43.4	0.147	0.614			
2527-58	NA	GC-RAD-12-048-050	48-50	31.7	39.8	0.155	0.604			
2527-60	NA	GC-RAD-12-054-056	54-56	25.3	35.8	0.228	0.722			
2527-62	NA	GC-RAD-12-060-062	60-62	37.5	37.2	0.189	0.483			
2527-64	NA	GC-RAD-12-066-068	66-68	40.6	39.3	0.119	0.568			
2527-66	NA	GC-RAD-12-072-074	72-74	35.1	37.7	0.208	0.331			
2527-68	NA	GC-RAD-12-078-080	78-80	37.7	39.3	0.135	0.467			
2527-70	NA	GC-RAD-12-084-086	84-86	28.2	38.2	0.253	0.521			
2527-72	NA	GC-RAD-12-090-092	90-92	31.0	42.9	0.160	0.418			
2527-74	NA	GC-RAD-12-096-098	96-98	21.4	34.7	0.330	0.620			

**Cs-137 Results in Sediments
GOWANUS**

Samples received 1/24-31/06

Results reported in disintegrations/minute/gram

PROJECT: 2527

BATTELLE CODE	Core ID	SPONSOR CODE	Depth (cm)	Dry Wt. (g)	Percent Dry Wt. (g)	Cs137 detection limit (dis/min/g)	Cs 137 dis/min/g (dry wt.)	SRM CERTIFIED VALUE dis/min/g	%RPD
Core 12, cont.									
2527-76	NA	GC-RAD-12-102-104	102-104	23.4	33.0	0.225	0.797		
2527-78	NA	GC-RAD-12-108-110	108-110	3.39	25.9	1.176	1.40		
2527-80	NA	GC-RAD-12-114-116	114-116	24.9	33.0	0.187	0.483		
2527-82	NA	GC-RAD-12-120-122	120-122	21.7	31.3	0.323	0.630		
Core 21									
2527-122	NA	GC-RAD-21-102-104	102-104	44.0	48.7	0.169	0.704		
2527-124	NA	GC-RAD-21-108-110	108-110	46.7	49.1	0.153	0.705		
2527-128	NA	GC-RAD-21-120-122	120-122	46.7	49.1	0.106	0.889		
2527-132	NA	GC-RAD-21-132-134	132-134	48.4	53.3	0.157	0.898		
2527-134	NA	GC-RAD-21-138-140	138-140	45.0	64.5	0.113	1.01		
2527-136	NA	GC-RAD-21-144-146	144-146	59.9	54.7	0.073	0.669		
2527-458	NA	GC-ORG-21-150-160	150-160	16.5	48.6	0.432	1.39		
2527-437	NA	GC-SED-21B (7-8)	213-244	30.0	75.2	0.164	0.577		
Core 31									
2527-304	NA	GC-RAD-31-096-098	96-98	33.5	47.0	0.206	1.01		
2527-306	NA	GC-RAD-31-102-104	102-104	22.1	38.1	0.323	1.10		
2527-308	NA	GC-RAD-31-108-110	108-110	23.0	36.3	0.215	1.28		
2527-310	NA	GC-RAD-31-114-116	114-116	19.9	36.3	0.337	1.45		
2527-312	NA	GC-RAD-31-120-122	120-122	29.9	36.9	0.177	0.957		
2527-314	NA	GC-RAD-31-126-128	126-128	20.4	34.5	0.347	1.41		
2527-316	NA	GC-RAD-31-132-134	132-134	24.4	35.0	0.198	1.17		
2527-318	NA	GC-RAD-31-138-140	138-140	14.8	34.8	0.334	1.41		
2527-320	NA	GC-RAD-31-144-146	144-146	19.1	32.4	0.354	1.44		
2527-426 R1	NA	GC-RAD-31-150-160	150-160	13.5	37.9	0.281	0.548		
2527-426 R2	NA	GC-RAD-31-150-160	150-160	13.5	37.9	0.350	0.350 U		NA
2527-427	NA	GC-RAD-31-170-180	170-180	25.5	43.4	0.110	0.661		
2527-428	NA	GC-RAD-31-190-200	190-200	15.9	43.8	0.260	1.73		
2527-429	NA	GC-RAD-31-210-220	210-220	15.2	50.6	0.262	1.39		
2527-430	NA	GC-RAD-31-230-240	230-240	5.05	40.8	0.784	2.29		
2527-431	NA	GC-RAD-31-250-260	250-260	4.57	45.4	0.868	1.85		
2527-432	NA	GC-RAD-31-270-280	270-280	11.7	52.8	0.334	1.41		
2527-433	NA	GC-RAD-31-290-300	290-300	17.2	59.5	0.273	0.454		
2527-434	NA	GC-RAD-31-310-320	310-320	11.1	52.6	0.274	0.274 U		
2527-435	NA	GC-RAD-31-330-340	330-340	23.8	68.6	0.167	0.324		
Core 87									
2527-156	NA	GC-RAD-87-066-068	66-68	30.7	42.7	0.167	1.68		
2527-158	NA	GC-RAD-87-072-074	72-74	24.4	43.6	0.227	0.732		
2527-160	NA	GC-RAD-87-078-080	78-80	40.5	56.5	0.130	0.768		
2527-162	NA	GC-RAD-87-084-086	84-86	32.7	44.1	0.231	1.09		
2527-164	NA	GC-RAD-87-090-092	90-92	32.6	44.9	0.151	0.690		
2527-166	NA	GC-RAD-87-096-098	96-98	25.2	44.5	0.096	0.646		
2527-168	NA	GC-RAD-87-102-104	102-104	30.9	42.4	0.163	0.696		
2527-170	NA	GC-RAD-87-108-110	108-110	33.0	42.7	0.213	1.12		
2527-172 R1	NA	GC-RAD-87-114-116	114-116	38.8	45.3	0.201	0.907		
2527-172 R2	NA	GC-RAD-87-114-116	114-116	38.8	45.3	0.195	0.960		
2527-174	NA	GC-RAD-87-120-122	120-122	33.6	45.0	0.166	1.15		6%

**Cs-137 Results in Sediments
GOWANUS**

Samples received 1/24-31/06

Results reported in disintegrations/minute/gram

PROJECT: 2527

BATTELLE CODE	Core ID	SPONSOR CODE	Depth (cm)	Dry Wt. (g)	Percent Dry Wt. (g)	Cs137 detection limit (dis/min/g)	Cs 137 dis/min/g (dry wt.)	SRM CERTIFIED VALUE dis/min/g	%RPD
Core 87, cont.									
2527-176	NA	GC-RAD-87-126-128	126-128	41.3	46.7	0.180	0.715		
2527-178	NA	GC-RAD-87-132-134	132-134	34.4	45.8	0.157	0.641		
2527-180	NA	GC-RAD-87-138-140	138-140	30.4	45.4	0.262	0.614		
2527-182	NA	GC-RAD-87-144-146	144-146	35.5	45.7	0.154	0.779		
2527-419	NA	GC-RAD-87-160-170	160-170	17.2	35.5	0.280	0.280 U		
2527-420	NA	GC-RAD-87-180-190	180-190	14.5	29.8	0.482	0.482 U		
2527-421	NA	GC-RAD-87-200-210	200-210	22.4	45.8	0.229	0.229 U		
2527-422	NA	GC-RAD-87-220-230	220-230	58.5	84.9	0.121	0.121 U		
2527-423	NA	GC-RAD-87-240-250	240-250	34.7	64.5	0.163	0.163 U		
Core 88									
2527-258	NA	GC-RAD-88-096-098	96-98	46.0	41.5	0.113	0.666		
2527-260	NA	GC-RAD-88-102-104	102-104	35.3	42.3	0.206	0.754		
2527-262	NA	GC-RAD-88-108-110	108-110	30.8	36.9	0.159	1.12		
2527-264	NA	GC-RAD-88-114-116	114-116	43.9	44.7	0.140	1.10		
2527-266	NA	GC-RAD-88-120-122	120-122	29.9	39.0	0.179	0.980		
2527-268	NA	GC-RAD-88-126-128	126-128	24.3	38.1	0.215	1.17		
2527-270	NA	GC-RAD-88-132-134	132-134	22.4	41.5	0.181	1.15		
2527-272	NA	GC-RAD-88-138-140	138-140	26.6	39.9	0.187	1.26		
2527-274	NA	GC-RAD-88-144-146	144-146	19.1	41.1	0.371	1.17		
2527-409	NA	GC-RAD-88-160-170	160-170	5.89	34.2	0.826	1.57		
2527-410 R1	NA	GC-RAD-88-180-190	180-190	11.4	38.6	0.587	2.55		
2527-410 R2	NA	GC-RAD-88-180-190	180-190	11.4	38.6	0.626	2.27		12%
2527-411	NA	GC-RAD-88-200-210	200-210	9.37	28.0	0.503	2.11		
2527-412	NA	GC-RAD-88-220-230	220-230	12.8	46.7	0.561	2.36		
2527-413	NA	GC-RAD-88-240-250	240-250	17.4	50.1	0.230	1.86		
2527-414	NA	GC-RAD-88-260-270	260-270	10.6	25.1	0.464	3.31		
2527-415	NA	GC-RAD-88-280-290	280-290	35.0	79.6	0.199	0.303		
2527-416	NA	GC-RAD-88-300-310	300-310	7.13	35.6	0.910	0.994		
2527-417	NA	GC-RAD-88-320-330	320-330	42.4	77.8	0.125	0.125 U		
2527-418	NA	GC-RAD-88-340-350	340-350	53.1	85.1	0.083	0.0828 U		
2527-438	NA	GC-SED-88 (15.9-16.9)	485-515	58.0	82.4	0.125	0.125 U		

U = less than or equal to calculated detection limit.

* = % difference.

@ = RPD.

Percent Dry Weight

Percent Dry Weight

Project: Gowanus
 Central File #: 2527
 Analyst: JP/MM/TF/LSB

Date: 31-Jan-06
 Balance: 11
 Matrix: Sed

Sample ID	Tare Weight (g)	Tare+Wet Weight (g)	Tare+Dry Weight (g)	Wet Weight (g)	Dry Weight (g)	% Dry Weight	% Wet Weight
1	30.253	152.167	102.787	121.914	72.534	59.50	40.50
2	31.142	215.070	177.802	183.928	146.660	79.74	20.26
3	30.215	213.196	177.377	182.981	147.162	80.42	19.58
4	30.250	126.685	91.232	96.435	60.982	63.24	36.76
5	30.416	180.796	148.257	150.380	117.841	78.36	21.64
6	30.140	192.010	161.161	161.870	131.021	80.94	19.06
7	30.436	150.145	104.880	119.709	74.444	62.19	37.81
8	30.291	178.603	145.380	148.312	115.089	77.60	22.40
9	30.334	131.206	81.535	100.872	51.201	50.76	49.24
10	30.078	164.882	127.842	134.804	97.764	72.52	27.48
11	30.975	153.571	125.963	122.596	94.988	77.48	22.52
12	30.247	118.837	87.492	88.590	57.245	64.62	35.38
13	30.124	170.700	141.481	140.576	111.357	79.21	20.79
14	29.750	104.030	54.862	74.280	25.112	33.81	66.19
15	30.174	125.001	79.211	94.827	49.037	51.71	48.29
17	29.895	167.717	140.333	137.822	110.438	80.13	19.87
19	29.554	168.840	135.998	139.286	106.444	76.42	23.58
21	30.179	160.135	133.281	129.956	103.102	79.34	20.66
23	30.130	152.013	105.097	121.883	74.967	61.51	38.49
25	30.114	121.857	77.275	91.743	47.161	51.41	48.59
27	29.569	166.634	139.114	137.065	109.545	79.92	20.08
29	29.518	117.898	79.079	88.380	49.561	56.08	43.92
31	30.777	141.709	107.166	110.932	76.389	68.86	31.14
33	29.965	163.530	133.141	133.565	103.176	77.25	22.75
35	29.983	109.446	80.400	79.463	50.417	63.45	36.55
37	29.714	132.958	94.980	103.244	65.266	63.22	36.78
39	29.711	115.679	73.907	85.968	44.196	51.41	48.59
41	29.712	159.635	113.670	129.923	83.958	64.62	35.38
43	29.498	101.239	71.161	71.741	41.663	58.07	41.93
45	29.691	145.784	117.356	116.093	87.665	75.51	24.49
46	29.915	106.214	56.684	76.299	26.769	35.08	64.92
47	29.944	116.014	61.577	86.070	31.633	36.75	63.25
48	31.056	116.147	59.094	85.091	28.038	32.95	67.05
49	29.738	115.708	62.539	85.970	32.801	38.15	61.85
50	30.383	135.582	71.304	105.199	40.921	38.90	61.10
51	30.996	128.333	61.251	97.337	30.255	31.08	68.92
52	30.431	108.020	54.296	77.589	23.865	30.76	69.24
53	30.413	126.777	62.273	96.364	31.860	33.06	66.94
54	29.853	113.947	61.586	84.094	31.733	37.74	62.26
55	30.250	109.267	59.406	79.017	29.156	36.90	63.10
56	30.370	112.781	59.845	82.411	29.475	35.77	64.23
57	30.980	119.909	69.551	88.929	38.571	43.37	56.63
58	30.190	117.481	64.921	87.291	34.731	39.79	60.21
60	31.016	110.106	59.321	79.090	28.305	35.79	64.21
62	30.291	139.075	70.763	108.784	40.472	37.20	62.80
64	30.346	141.530	74.001	111.184	43.655	39.26	60.74
66	31.169	132.212	69.259	101.043	38.090	37.70	62.30
68	30.128	133.781	70.871	103.653	40.743	39.31	60.69
70	29.968	111.680	61.186	81.712	31.218	38.20	61.80
72	30.177	109.480	64.186	79.303	34.009	42.88	57.12
74	29.919	100.373	54.363	70.454	24.444	34.69	65.31
76	29.962	110.082	56.425	80.120	26.463	33.03	66.97

Percent Dry Weight

Project: Gowanus
 Central File #: 2527
 Analyst: JP/MM/TF/LSB

Date: 31-Jan-06
 Balance: 11
 Matrix: Sed

Sample ID	Tare Weight (g)	Tare+Wet Weight (g)	Tare+Dry Weight (g)	Wet Weight (g)	Dry Weight (g)	% Dry Weight	% Wet Weight
78	30.313	66.502	39.702	36.189	9.389	25.94	74.06
80	29.920	114.544	57.804	84.624	27.884	32.95	67.05
82	31.039	110.044	55.772	79.005	24.733	31.31	68.69
84	29.750	104.030	54.862	74.280	25.112	33.81	66.19
86	30.464	112.771	58.274	82.307	27.810	33.79	66.21
88	30.392	111.158	58.009	80.766	27.617	34.19	65.81
90	30.939	105.917	55.186	74.978	24.247	32.34	67.66
92	29.840	103.961	62.516	74.121	32.676	44.08	55.92
93	29.971	105.843	64.835	75.872	34.864	45.95	54.05
94	29.986	100.973	64.420	70.987	34.434	48.51	51.49
95	30.769	117.010	70.459	86.241	39.690	46.02	53.98
96	29.696	130.288	78.087	100.592	48.391	48.11	51.89
97	29.729	120.369	73.915	90.640	44.186	48.75	51.25
98	29.583	132.376	78.643	102.793	49.060	47.73	52.27
99	29.543	119.585	71.517	90.042	41.974	46.62	53.38
100	30.828	146.776	87.376	115.948	56.548	48.77	51.23
101	30.865	145.491	86.233	114.626	55.368	48.30	51.70
102	30.112	117.752	92.084	87.640	61.972	70.71	29.29
103	30.107	128.129	75.140	98.022	45.033	45.94	54.06
104	30.037	114.647	85.248	84.610	55.211	65.25	34.75
106	29.746	121.145	73.767	91.399	44.021	48.16	51.84
108	30.126	133.129	86.554	103.003	56.428	54.78	45.22
110	30.163	135.961	84.667	105.798	54.504	51.52	48.48
112	30.693	143.449	87.482	112.756	56.789	50.36	49.64
114	29.573	136.655	89.381	107.082	59.808	55.85	44.15
116	29.540	148.699	89.305	119.159	59.765	50.16	49.84
118	30.862	140.332	86.156	109.470	55.294	50.51	49.49
120	29.952	128.187	79.912	98.235	49.960	50.86	49.14
122	30.258	126.835	77.273	96.577	47.015	48.68	51.32
124	30.239	139.684	85.517	109.445	55.278	50.51	49.49
126	30.217	125.312	83.324	95.095	53.107	55.85	44.15
128	30.321	131.525	80.017	101.204	49.696	49.10	50.90
130	30.324	134.077	99.826	103.753	69.502	66.99	33.01
132	29.885	126.211	81.260	96.326	51.375	53.33	46.67
134	29.744	104.184	77.742	74.440	47.998	64.48	35.52
136	29.596	144.592	92.542	114.996	62.946	54.74	45.26
138	31.065	83.621	45.485	52.556	14.420	27.44	72.56
139	29.823	85.927	46.882	56.104	17.059	30.41	69.59
140	30.845	73.851	41.957	43.006	11.112	25.84	74.16
141	29.619	83.539	44.431	53.920	14.812	27.47	72.53
142	30.003	84.696	47.704	54.693	17.701	32.36	67.64
143	30.216	80.043	45.315	49.827	15.099	30.30	69.70
144	30.134	70.879	45.595	40.745	15.461	37.95	62.05
145	29.942	77.462	47.179	47.520	17.237	36.27	63.73
146	30.215	62.528	43.311	32.313	13.096	40.53	59.47
147	29.776	58.652	41.611	28.876	11.835	40.99	59.01
148	29.995	82.178	49.757	52.183	19.762	37.87	62.13
149	30.106	87.152	49.775	57.046	19.669	34.48	65.52
150	30.045	89.425	53.714	59.380	23.669	39.86	60.14
152	30.037	89.598	54.707	59.561	24.670	41.42	58.58
154	30.885	91.593	56.456	60.708	25.571	42.12	57.88
156	30.151	109.230	63.900	79.079	33.749	42.68	57.32

Percent Dry Weight

Project: Gowanus
 Central File #: 2527
 Analyst: JP/MM/TF/LSB

Date: 31-Jan-06
 Balance: 11
 Matrix: Sed

Sample ID	Tare Weight (g)	Tare+Wet Weight (g)	Tare+Dry Weight (g)	Wet Weight (g)	Dry Weight (g)	% Dry Weight	% Wet Weight
158	30.231	93.141	57.674	62.910	27.443	43.62	56.38
160	29.659	95.836	58.439	66.177	28.780	43.49	56.51
162	30.159	111.179	65.873	81.020	35.714	44.08	55.92
164	30.118	109.497	65.754	79.379	35.636	44.89	55.11
166	29.630	93.058	57.832	63.428	28.202	44.46	55.54
168	29.982	109.891	63.824	79.909	33.842	42.35	57.65
170	29.715	113.904	65.682	84.189	35.967	42.72	57.28
172	29.595	122.007	71.442	92.412	41.847	45.28	54.72
174	29.871	111.219	66.502	81.348	36.631	45.03	54.97
176	29.898	124.666	74.172	94.768	44.274	46.72	53.28
178	29.715	111.350	67.066	81.635	37.351	45.75	54.25
180	30.440	104.117	63.877	73.677	33.437	45.38	54.62
182	30.201	114.503	68.718	84.302	38.517	45.69	54.31
222	30.186	126.075	101.674	95.889	71.488	74.55	25.45
230	29.897	89.464	48.964	59.567	19.067	32.01	67.99
231	29.849	114.301	58.413	84.452	28.564	33.82	66.18
232	30.375	106.436	57.865	76.061	27.490	36.14	63.86
233	29.748	121.339	59.637	91.591	29.889	32.63	67.37
234	31.051	112.334	59.328	81.283	28.277	34.79	65.21
235	30.276	114.943	55.317	84.667	25.041	29.58	70.42
236	31.071	133.971	73.752	102.900	42.681	41.48	58.52
237	30.037	101.314	54.213	71.277	24.176	33.92	66.08
238	30.901	107.255	60.860	76.354	29.959	39.24	60.76
239	30.274	90.443	48.981	60.169	18.707	31.09	68.91
240	29.748	105.037	57.438	75.289	27.690	36.78	63.22
241	29.967	93.217	53.333	63.250	23.366	36.94	63.06
242	30.280	112.745	62.312	82.465	32.032	38.84	61.16
244	30.399	118.828	59.730	88.429	29.331	33.17	66.83
246	29.970	128.845	63.258	98.875	33.288	33.67	66.33
248	30.220	126.650	67.135	96.430	36.915	38.28	61.72
250	29.855	99.892	59.439	70.037	29.584	42.24	57.76
252	30.275	110.690	63.910	80.415	33.635	41.83	58.17
254	29.876	139.765	86.386	109.889	56.510	51.42	48.58
256	20.094	129.733	71.038	109.639	50.944	46.47	53.53
258	30.210	148.408	79.218	118.198	49.008	41.46	58.54
260	29.667	120.164	67.942	90.497	38.275	42.29	57.71
262	30.032	121.786	63.879	91.754	33.847	36.89	63.11
264	30.351	135.102	77.207	104.751	46.856	44.73	55.27
266	31.078	115.495	64.001	84.417	32.923	39.00	61.00
268	30.269	101.921	57.542	71.652	27.273	38.06	61.94
270	30.942	92.190	56.338	61.248	25.396	41.46	58.54
272	30.316	104.530	59.893	74.214	29.577	39.85	60.15
274	30.373	84.080	52.445	53.707	22.072	41.10	58.90
276	29.857	102.859	53.174	73.002	23.317	31.94	68.06
277	29.877	120.028	69.212	90.151	39.335	43.63	56.37
278	30.040	126.286	75.970	96.246	45.930	47.72	52.28
279	30.397	118.690	70.793	88.293	40.396	45.75	54.25
280	29.962	125.449	71.526	95.487	41.564	43.53	56.47
281	30.251	142.757	78.351	112.506	48.100	42.75	57.25
282	30.417	116.883	68.255	86.466	37.838	43.76	56.24
283	30.030	135.646	74.935	105.616	44.905	42.52	57.48
284	30.109	149.545	91.558	119.436	61.449	51.45	48.55

Percent Dry Weight

Project: Gowanus
 Central File #: 2527
 Analyst: JP/MM/TF/LSB

Date: 31-Jan-06
 Balance: 11
 Matrix: Sed

Sample ID	Tare Weight (g)	Tare+Wet Weight (g)	Tare+Dry Weight (g)	Wet Weight (g)	Dry Weight (g)	% Dry Weight	% Wet Weight
285	29.827	147.555	95.489	117.728	65.662	55.77	44.23
286	29.849	111.280	69.657	81.431	39.808	48.89	51.11
287	29.765	150.273	97.793	120.508	68.028	56.45	43.55
288	31.084	133.987	88.744	102.903	57.660	56.03	43.97
290	30.157	131.530	88.188	101.373	58.031	57.25	42.75
292	31.059	135.665	89.469	104.606	58.410	55.84	44.16
294	31.123	116.408	68.402	85.285	37.279	43.71	56.29
296	30.170	145.224	89.547	115.054	59.377	51.61	48.39
298	29.934	129.094	79.026	99.160	49.092	49.51	50.49
300	30.381	140.336	84.484	109.955	54.103	49.20	50.80
302	29.852	141.971	86.739	112.119	56.887	50.74	49.26
304	30.312	108.060	66.865	77.748	36.553	47.01	52.99
306	30.197	95.937	55.255	65.740	25.058	38.12	61.88
308	30.126	101.656	56.122	71.530	25.996	36.34	63.66
310	29.754	92.816	52.638	63.062	22.884	36.29	63.71
312	31.078	120.221	63.949	89.143	32.871	36.87	63.13
314	30.931	98.794	54.315	67.863	23.384	34.46	65.54
316	29.709	108.055	57.118	78.346	27.409	34.98	65.02
318	30.389	81.575	48.202	51.186	17.813	34.80	65.20
320	29.948	98.387	52.108	68.439	22.160	32.38	67.62
368	29.744	104.184	77.742	74.440	47.998	64.48	35.52
369	30.870	93.249	75.720	62.379	44.850	71.90	28.10
370	30.466	165.140	123.963	134.674	93.497	69.42	30.58
371	30.357	140.016	107.335	109.659	76.978	70.20	29.80
372	29.679	133.545	107.627	103.866	77.948	75.05	24.95
373	29.979	173.200	142.889	143.221	112.910	78.84	21.16
374	29.842	159.449	134.137	129.607	104.295	80.47	19.53
375	29.906	131.660	112.046	101.754	82.140	80.72	19.28
376	30.886	107.351	92.476	76.465	61.590	80.55	19.45
377	29.883	122.890	102.300	93.007	72.417	77.86	22.14
378	30.331	111.510	93.274	81.179	62.943	77.54	22.46
379	30.285	116.216	97.226	85.931	66.941	77.90	22.10
380	30.123	104.953	89.643	74.830	59.520	79.54	20.46
382	29.848	86.653	72.040	56.805	42.192	74.28	25.72
384	30.469	125.424	96.672	94.955	66.203	69.72	30.28
386	30.393	117.578	81.087	87.185	50.694	58.15	41.85
388	31.036	118.255	86.629	87.219	55.593	63.74	36.26
390	30.476	115.981	80.876	85.505	50.400	58.94	41.06
392	30.190	131.038	88.122	100.848	57.932	57.44	42.56
394	30.268	161.151	117.457	130.883	87.189	66.62	33.38
396	30.060	131.603	98.064	101.543	68.004	66.97	33.03
398	30.366	120.882	97.454	90.516	67.088	74.12	25.88
400	29.948	113.147	88.280	83.199	58.332	70.11	29.89
402	30.405	180.861	148.939	150.456	118.534	78.78	21.22
404	31.107	123.082	82.272	91.975	51.165	55.63	44.37
406	29.869	131.189	86.247	101.320	56.378	55.64	44.36
408	30.349	154.566	97.462	124.217	67.113	54.03	45.97
409	18.067	52.759	29.944	34.692	11.877	34.24	65.76
410	18.088	55.385	32.474	37.297	14.386	38.57	61.43
411	18.107	62.270	30.479	44.163	12.372	28.01	71.99
412	18.099	51.875	33.889	33.776	15.790	46.75	53.25
413	17.911	58.569	38.297	40.658	20.386	50.14	49.86

Percent Dry Weight

Project: Gowanus
 Central File #: 2527
 Analyst: JP/MM/TF/LSB

Date: 31-Jan-06
 Balance: 11
 Matrix: Sed

Sample ID	Tare Weight (g)	Tare+Wet Weight (g)	Tare+Dry Weight (g)	Wet Weight (g)	Dry Weight (g)	% Dry Weight	% Wet Weight
414	18.154	72.448	31.779	54.294	13.625	25.09	74.91
415	18.167	65.948	56.211	47.781	38.044	79.62	20.38
416	18.111	46.589	28.236	28.478	10.125	35.55	64.45
417	18.311	80.591	66.755	62.280	48.444	77.78	22.22
418	18.004	83.981	74.126	65.977	56.122	85.06	14.94
419	18.230	75.170	38.445	56.940	20.215	35.50	64.50
420	18.009	76.892	35.563	58.883	17.554	29.81	70.19
421	17.980	73.536	43.426	55.556	25.446	45.80	54.20
422	18.022	90.425	79.488	72.403	61.466	84.89	15.11
423	18.017	76.532	55.769	58.515	37.752	64.52	35.48
424	18.330	105.525	85.420	87.195	67.090	76.94	23.06
425	18.349	92.493	76.093	74.144	57.744	77.88	22.12
426	1.243	3.951	2.268	2.708	1.025	37.85	62.15
427 R1	1.253	8.696	4.485	7.443	3.232	43.42	56.58
427 R2	1.244	6.637	3.656	5.393	2.412	44.72	55.28
428	1.267	8.777	4.557	7.510	3.290	43.81	56.19
429	1.264	6.994	4.164	5.730	2.900	50.61	49.39
430	1.258	4.176	2.449	2.918	1.191	40.82	59.18
431	1.256	5.932	3.380	4.676	2.124	45.42	54.58
432	1.247	10.058	5.896	8.811	4.649	52.76	47.24
433	1.270	5.432	3.745	4.162	2.475	59.47	40.53
434	1.250	6.162	3.832	4.912	2.582	52.57	47.43
435	1.259	7.554	5.575	6.295	4.316	68.56	31.44
436	30.140	91.525	83.000	61.385	52.860	86.11	13.89
437	30.105	82.585	69.560	52.480	39.455	75.18	24.82
438	29.593	115.365	100.288	85.772	70.695	82.42	17.58
439	29.854	95.570	72.462	65.716	42.608	64.84	35.16
440	29.655	58.966	43.974	29.311	14.319	48.85	51.15
441	30.123	76.744	48.685	46.621	18.562	39.81	60.19
442	30.143	67.009	50.187	36.866	20.044	54.37	45.63
443	29.991	77.670	60.715	47.679	30.724	64.44	35.56
444	29.877	58.519	43.606	28.642	13.729	47.93	52.07
445	30.153	60.782	47.440	30.629	17.287	56.44	43.56
446	29.918	59.854	47.169	29.936	17.251	57.63	42.37
447	30.270	58.381	44.816	28.111	14.546	51.74	48.26
448	30.275	57.230	45.064	26.955	14.789	54.87	45.13
449	29.976	61.259	45.811	31.283	15.835	50.62	49.38
450	30.442	63.954	49.548	33.512	19.106	57.01	42.99
451	30.253	61.032	47.854	30.779	17.601	57.19	42.81
452	30.291	60.568	49.702	30.277	19.411	64.11	35.89
453	29.875	83.698	71.773	53.823	41.898	77.84	22.16
454	30.247	59.688	44.826	29.441	14.579	49.52	50.48
455	29.850	64.060	44.768	34.210	14.918	43.61	56.39
456	31.092	61.674	46.811	30.582	15.719	51.40	48.60
457	30.431	59.045	45.522	28.614	15.091	52.74	47.26
458	31.064	74.290	52.078	43.226	21.014	48.61	51.39

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527 Sample No(s): 1-149Project Manager: Bingler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: Sediment WP# W75789

Yes No
☐ ☒ Navy type Project (requires high-level sample tracking procedures)
☐ ☒ Filter Samples: Amount Entire sample Half of sample
☒ ☐ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
☐ ☒ Special instructions:

Sample Preservation Instructions:

Date To Archive:

Date To Dispose: See Log

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☒ ☐ Was a custody seal present?

☐ ☐ ☒ Was the custody seal intact?

☐ ☒ ☐ Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$? 1-9.3 3-5.2 $^\circ\text{C}$
(if multiple coolers, note temp. of each) 2-11.2 4-4.7 $^\circ\text{C}$

☒ ☐ ☐ Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?
Comment/Remedy:

☒ ☐ ☐ Were all chain of custody forms signed and dated?

☐ ☒ ☐ Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain): Temp out

Container type:

Teflon Poly

☒ Glass ☒ Spex

Other:

Notes:

Completed By: [Signature]Date/Time: 01/25/06 1100

SAMPLE PRESERVATION

☒ Sample(s) were preserved at MSL

☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____

☐ Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:

☐ 0.2% HNO₃

Notes: _____

☐ 0.5% HCl (Hg samples)

Notes: _____

☒ Refrigerate/FreezeNotes: keep frozen, & outside frozen (see log in)☐ Other

Notes: _____

Completed By: [Signature]Date/Time: 01/25/06 1100

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/22/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GL-RAO-01-000-002	1/22/06	sediment	1	1			2527-1	
2	GL-RAO-01-004-006		sediment	1	1			2527-2	
3	GL-RAO-01-008-010		sediment	1	1			2527-3	
4	GL-RAO-01-012-014		sediment	1	1			2527-4	
5	GL-RAO-01-016-018		sediment	1	1			2527-5	
6	GL-RAO-01-020-022		sediment	1	1			2527-6	
7	GL-RAO-01-024-026		sediment	1	1			2527-7	
8	GL-RAO-01-028-030		sediment	1	1			2527-8	
9	GL-RAO-01-032-034		sediment	1	1			2527-9	
10	GL-RAO-01-036-038		sediment	1	1			2527-10	
11	GL-RAO-01-040-042		sediment	1	1			2527-11	
12	GL-RAO-01-044-046		sediment	1	1			2527-12	
13	GL-RAO-01-048-050		sediment	1	1			2527-13	
14	GL-RAO-01-052-054		sediment	1	1			2527-14	
15	GL-RAO-01-054-056		sediment	1	1			2527-15	* All Core Frozen

Relinquished By: Linda S. Bingler Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingler Date/Time: 1/23/06 1400

Received By: Steve M. H. Gahan Company: MSL
Signature/Printed Name: Steve M. H. Gahan Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/22/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	GL-RAO-01-056-058	1/22/06	sediment	1	1		2527-16	* Archive frozen
2	GL-RAO-01-060-062		sediment	1	1		2527-17	
3	GL-RAO-01-064-066		sediment	1	1		2527-18	* Archive frozen
4	GL-RAO-01-066-068		sediment	1	1		2527-19	
5	GL-RAO-01-068-070		sediment	1	1		2527-20	* Archive frozen
6	GL-RAO-01-072-074		sediment	1	1		2527-21	
7	GL-RAO-01-076-078		sediment	1	1		2527-22	* Archive frozen
8	GL-RAO-01-078-080		sediment	1	1		2527-23	
9	GL-RAO-01-080-082		sediment	1	1		2527-24	* Archive frozen
10	GL-RAO-01-084-086		sediment	1	1		2527-25	
11	GL-RAO-01-088-090		sediment	1	1		2527-26	* Archive frozen
12	GL-RAO-01-090-092		sediment	1	1		2527-27	
13	GL-RAO-01-092-094		sediment	1	1		2527-28	* Archive frozen
14	GL-RAO-01-096-098		sediment	1	1		2527-29	
15	GL-RAO-01-100-102		sediment	1	1		2527-30	* Archive frozen

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/22/06 1600

Received By: Jeffrey H. Heston Company: MSL
Signature/Printed Name: Jeffrey H. Heston Date/Time: 1/22/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/23/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GL-D1-RAO-102-104		sediment	1	1			2527-31	
2	GL-D1-RAO-104-106		sediment	1	1			2527-32	* Archive frozen
3	GL-D1-RAO-108-110		sediment	1	1			2527-33	
4	GL-D1-RAO-112-114		sediment	1	1			2527-34	* Archive frozen
5	GL-D1-RAO-114-116		sediment	1	1			2527-35	
6	GL-D1-RAO-116-118		sediment	1	1			2527-36	* Archive frozen
7	GL-D1-RAO-120-122		sediment	1	1			2527-37	
8	GL-D1-RAO-124-126		sediment	1	1			2527-38	* Archive frozen
9	GL-D1-RAO-126-128		sediment	1	1			2527-39	
10	GL-D1-RAO-128-130		sediment	1	1			2527-40	* Archive frozen
11	GL-D1-RAO-132-134		sediment	1	1			2527-41	
12	GL-D1-RAO-134-138		sediment	1	1			2527-42	* Archive frozen
13	GL-D1-RAO-138-140		sediment	1	1			2527-43	
14	GL-D1-RAO-140-142		sediment	1	1			2527-44	* Archive frozen
15	GL-D1-RAO-144-146		sediment	1	1			2527-45	
GL-D1-RAO-148-150				1	1			2527-46A	* Archive frozen

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/23/06 1400

Received By: Michelle Stahler Company: MSL
Signature/Printed Name: Michelle Stahler Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/23/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	GL-RAO-12-000-002	1/23/06	sediment	1	X		2527-46	
2	GL-RAO-12-004-006		sediment	1	X		2527-47	
3	GL-RAO-12-008-010		sediment	1	X		2527-48	
4	GL-RAO-12-014-016		sediment	1	X		2527-49	
5	GL-RAO-12-018-020		sediment	1	X		2527-50	
6	GL-RAO-12-020-022		sediment	1	X		2527-51	
7	GL-RAO-12-024-026		sediment	1	X		2527-52	
8	GL-RAO-12-028-030		sediment	1	X		2527-53	
9	GL-RAO-12-032-034		sediment	1	X		2527-54	
10	GL-RAO-12-036-038		sediment	1	X		2527-55	
11	GL-RAO-12-040-042		sediment	1	X		2527-56	
12	GL-RAO-12-044-046		sediment	1	X		2527-57	
13	GL-RAO-12-048-050		sediment	1	X		2527-58	
14	GL-RAO-12-052-054		sediment	1	X		2527-59	
15	GL-RAO-12-054-056		sediment	1	X		2527-60	Archive frozen

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/23/06 1400

Received By: PLH Company: PLH
Signature/Printed Name: PLH Date/Time: 01/26/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/23/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

* = ANALYTICAL FREQUENCIES

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GL-RAO-12-056-058	1/23/06	sediment	1	X			2527-61	*
2	GL-RAO-12-046-042		sediment	1	X			2527-62	
3	GL-RAO-12-044-044		sediment	1	X			2527-63	*
4	GL-RAO-12-046-068		sediment	1	X			2527-64	
5	GL-RAO-12-048-070		sediment	1	X			2527-65	*
6	GL-RAO-12-072-074		sediment	1	X			2527-66	
7	GL-RAO-12-076-078		sediment	1	X			2527-67	*
8	GL-RAO-12-078-086		sediment	1	X			2527-68	
9	GL-RAO-12-080-082		sediment	1	X			2527-69	*
10	GL-RAO-12-084-086		sediment	1	X			2527-70	
11	GL-RAO-12-088-090		sediment	1	X			2527-71	*
12	GL-RAO-12-090-092		sediment	1	X			2527-72	
13	GL-RAO-12-092-094		sediment	1	X			2527-73	*
14	GL-RAO-12-096-098		sediment	1	X			2527-74	
15	GL-RAO-12-100-102		sediment	1	X			2527-75	*

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Bingle
Signature/Printed Name: Linda S. Bingle Date/Time: 1/23/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: Michael M. Hester Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/23/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Star = Archive frozen

Project Name: GEL Cores

Project Manager: Linda Bingle

Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight

Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	GL-RAO-212702-104	1/23/06	sediment	1	Pb210	Organics		2527-76	
2	GL-RAO-212-104-106		sediment	1				2527-77	
3	GL-RAO-212-108-110		sediment	1				2527-78	
4	GL-RAO-212-113-114		sediment	1				2527-79	
5	GL-RAO-212-114-116		sediment	1				2527-80	
6	GL-RAO-212-116-118		sediment	1				2527-81	
7	GL-RAO-212-120-122		sediment	1				2527-82	
8	GL-RAO-212-124-126		sediment	1				2527-83	
9	GL-RAO-212-126-128		sediment	1				2527-84	
10	GL-RAO-212-128-130		sediment	1				2527-85	
11	GL-RAO-12-132-134		sediment	1				2527-86	
12	GL-RAO-12-134-138		sediment	1				2527-87	
13	GL-RAO-12-138-140		sediment	1				2527-88	
14	GL-RAO-12-140-142		sediment	1				2527-89	
15	GL-RAO-12-144-146		sediment	1				2527-90	
GL-RAO-12-148-150		1/23/06	sediment	1				2527-91	

Received By: [Signature]

Company: MSL

Signature/Printed Name: [Signature]

Date/Time: 01/25/06 1100

Company: Battelle/MSL

Date/Time: 1/23/06 1400

Received By: [Signature]

Company: [Blank]

Signature/Printed Name: [Blank]

Date/Time: [Blank]

Company: [Blank]

Date/Time: [Blank]

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/24/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Star - Archive frozen

Project Name: Gel Cores

Project Manager: Linda Bingle

Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight

Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1			sediment				2527-91	
2	GL-RAO-21-000-002	1/24/06	sediment	1	X		2527-92	
3	GL-RAO-21-004-006		sediment	1	X		2527-93	
4	GL-RAO-21-008-010		sediment	1	X		2527-94	
5	GL-RAO-21-012-014		sediment	1	X		2527-95	
6	GL-RAO-21-016-018		sediment	1	X		2527-96	
7	GL-RAO-21-020-022		sediment	1	X		2527-97	
8	GL-RAO-21-024-026		sediment	1	X		2527-98	
9	GL-RAO-21-028-030		sediment	1	X		2527-99	
10	GL-RAO-21-032-034		sediment	1	X		2527-100	
11	GL-RAO-21-036-038		sediment	1	X		2527-101	
12	GL-RAO-21-040-042		sediment	1	X		2527-102	
13	GL-RAO-21-044-046		sediment	1	X		2527-103	
14	GL-RAO-21-048-050		sediment	1	X		2527-104	
15	GL-RAO-21-052-054		sediment	1	X		2527-105	

Company: Battelle/MSL

Company: MSL

Received By: [Signature]

Date/Time: 1/25/06 1100

Relinquished By: [Signature]

Signature/Printed Name: Linda S. Bingle

Signature/Printed Name: [Signature]

Date/Time: 1/25/06 1100

Company: _____

Received By: _____

Company: _____

Date/Time: _____

Signature/Printed Name: _____

Signature/Printed Name: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/24/06



Project Name: GEI Cores
 Project Manager: Linda Bingle
 Phone Number: 360-681-3627/360-460-7000
 Shipment Method: Fed Ex overnight
 Preservation: Ice

... Putting Technology To Work
 Pacific Northwest Division
 Marine Sciences Laboratory
 1529 West Sequim Bay Road
 Sequim, Washington 98382
 * = Archive frozen

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210	Organics	Cs137		
1	GL-RAO-21-054-056	1/24/06	sediment	1	X			2527-106	
2	GL-RAO-21-056-058		sediment	1	X			2527-107	*
3	GL-RAO-21-060-062		sediment	1	X			2527-108	
4	GL-RAO-21-064-066		sediment	1	X			2527-109	*
5	GL-RAO-21-066-068		sediment	1	X			2527-110	
6	GL-RAO-21-068-070		sediment	1	X			2527-111	*
7	GL-RAO-21-072-074		sediment	1	X			2527-112	
8	GL-RAO-21-076-078		sediment	1	X			2527-113	*
9	GL-RAO-21-078-080		sediment	1	X			2527-114	
10	GL-RAO-21-080-082		sediment	1	X			2527-115	*
11	GL-RAO-21-084-086		sediment	1	X			2527-116	
12	GL-RAO-21-088-090		sediment	1	X			2527-117	*
13	GL-RAO-21-090-092		sediment	1	X			2527-118	
14	GL-RAO-21-092-094		sediment	1	X			2527-119	*
15	GL-RAO-21-096-098		sediment	1	X			2527-120	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
 Signature/Printed Name: Linda S. Bingle Date/Time: 1/24/06 1400

Relinquished By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

Received By: MSL Company: MSL
 Signature/Printed Name: MSL Date/Time: 01/25/06 1100

Received By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/24/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
** Archive Frozen*

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	GL-RAO-21-120702	1/24/06	sediment	1	X		2527-121	
2	GL-RAO-21-122-1104		sediment	1	X		2527-122	
3	GL-RAO-21-124-106		sediment	1	X		2527-123	
4	GL-RAO-21-108-110		sediment	1	X		2527-124	
5	GL-RAO-21-112-114		sediment	1	X		2527-125	
6	GL-RAO-21-114-116		sediment	1	X		2527-126	
7	GL-RAO-21-116-118		sediment	1	X		2527-127	
8	GL-RAO-21-120-122		sediment	1	X		2527-128	
9	GL-RAO-21-124-126		sediment	1	X		2527-129	
10	GL-RAO-21-126-128		sediment	1	X		2527-130	
11	GL-RAO-21-128-130		sediment	1	X		2527-131	
12	GL-RAO-21-132-134		sediment	1	X		2527-132	
13	GL-RAO-21-134-138		sediment	1	X		2527-133	
14	GL-RAO-21-138-140		sediment	1	X		2527-134	
15	GL-RAO-21-140-142		sediment	1	X		2527-135	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/24/06 1600

Received By: Michelle S. Hester Company: MSL
Signature/Printed Name: Michelle S. Hester Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/24/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	GC-RAD-21-144-146		sediment				2527-136	
2	GC-RAD-21-148-150		sediment				2527-137	Archaeo frozen
3			sediment				2527-138	
4			sediment				2527-139	
5			sediment				2527-140	
6			sediment				2527-141	
7			sediment				2527-142	
8			sediment				2527-143	
9			sediment				2527-144	
10			sediment				2527-145	
11			sediment				2527-146	
12			sediment				2527-147	
13			sediment				2527-148	
14			sediment				2527-149	
15			sediment				2527-150	

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Bingle
Signature/Printed Name: Linda S. Bingle Date/Time: 1/24/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/24/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1			sediment				2527-436	
2			sediment				2527-137	
3	GL-PCA0-87-060-002		sediment	1	X		2527-138	
4	GL-PCA0-87-004-006		sediment	1	X		2527-139	
5	GL-PCA0-87-068-010		sediment	1	X		2527-140	
6	GL-PCA0-87-012-014		sediment	1	X		2527-141	
7	GL-PCA0-87-016-018		sediment	1	X		2527-142	
8	GL-PCA0-87-020-022		sediment	1	X		2527-143	
9	GL-PCA0-87-024-026		sediment	1	X		2527-144	
10	GL-PCA0-87-028-030		sediment	1	X		2527-145	
11	GL-PCA0-87-032-034		sediment	1	X		2527-146	
12	GL-PCA0-87-036-038		sediment	1	X		2527-147	
13	GL-PCA0-87-040-042		sediment	1	X		2527-148	
14	GL-PCA0-87-044-046		sediment	1	X		2527-149	
15	GL-PCA0-87-048-050		sediment	1	X		2527-150	

collected 1/25/06 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Relinquished By: Linda S. Bingler Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingler Date/Time: 1/24/06 1600

Received By: Shirley H. Hatcher Company: MSL
Signature/Printed Name: Shirley H. Hatcher Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date: 1/22/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name: Louanna Canal
 Project Manager: Steve Matthews / Linda Kingler
 Phone Number: 360-481-5048 ext. 103
 Shipment Method: Fed ex overnight
 Preservation: ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters	Laboratory ID	Observations/Comments
1	GL-DRL-01-002-004	1/22/06	Sediment	1	X		Archive frozen
2	GL-DRL-01-002-008			1	X		
3	GL-DRL-01-010-012			1	X		
4	GL-DRL-01-014-016			1	X		
5	GL-DRL-01-018-020			1	X		
6	GL-DRL-01-022-024			1	X		
7	GL-DRL-01-026-028			1	X		
8	GL-DRL-01-030-032			1	X		
9	GL-DRL-01-034-036			1	X		
10	GL-DRL-01-038-040			1	X		
11	GL-DRL-01-042-044			1	X		
12	GL-DRL-01-046-048			1	X		
13	GL-DRL-01-050-052			1	X		
14	GL-DRL-01-054-056			1	X		
15	GL-DRL-01-060-064			1	X		

Relinquished By: [Signature] Company: MSL
 Signature/Printed Name: L.S. Dingle Date/Time: 1/23/06, 1400

Relinquished By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

Received By: [Signature] Company: MSL
 Signature/Printed Name: [Signature] Date/Time: 01/25/06 1100

Received By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/22/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name:

Project Manager:

Phone Number:

Shipment Method:

Preservation:

Guillemot Lard
Steve Guinley / Linda Singler
781-681-5040 ext. 103 / 360-681-3427

Fed Ex overnight
Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Organics				
1	AL-DRL-01-070-072	1/22/06	Sediment	1	X				Archive frozen
2	AL-DRL-01-074-076			1	X				
3	AL-DRL-01-082-084			1	X				
4	AL-DRL-01-086-088			1	X				
5	AL-DRL-01-094-096			1	X				
6	AL-DRL-01-098-100			1	X				
7	AL-DRL-01-106-108			1	X				
8	AL-DRL-01-110-112			1	X				
9	AL-DRL-01-118-120			1	X				
10	AL-DRL-01-122-124			1	X				
11	AL-DRL-01-130-132			1	X				
12	AL-DRL-01-134-136			1	X				
13	AL-DRL-01-142-144			1	X				
14	AL-DRL-01-146-148			1	X				
15	AL-DRL-01-150-152			1	X				

Relinquished By:

Linda S. Singler / Steve Guinley

Company:

Battelle MSL

1/23/06 1600

Relinquished By:

Signature/Printed Name

Company:

Date/Time

Received By:

Steve Guinley / Linda Singler

Company:

1/23/06 1100

Received By:

Signature/Printed Name

Company:

Date/Time

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/23/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

* Archive Frozen

Project Name: Groutless Canal
Project Manager: Steve Matheny / L. Binger
Phone Number: 381-681-5040 / 381-681-3607

Shipment Method: Fed ex overnight
Preservation: 7C

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters				Laboratory ID	Observations/Comments
					organics					
1	GL-DRL-12-D02-004	1/23/06	Sediment	1	X					A
2	GL-DRL-12-D04-008			1	X					B
3	GL-DRL-12-D04-008			1	X					B
4	GL-DRL-12-D14-016			1	X					B
5	GL-DRL-12-D18-020			1	X					B
6	GL-DRL-12-D22-024			1	X					B
7	GL-DRL-12-D26-028			1	X					B
8	GL-DRL-12-D30-032			1	X					B
9	GL-DRL-12-D34-036			1	X					B
10	GL-DRL-12-D38-040			1	X					B
11	GL-DRL-12-D42-044			1	X					B
12	GL-DRL-12-D46-048			1	X					B
13	GL-DRL-12-D50-052			1	X					B
14	GL-DRL-12-D54-056			1	X					B
15	GL-DRL-12-D58-060			1	X					B

Relinquished By: [Signature] Company: Battelle MSL
Signature/Printed Name: L.S. Binger / L. Binger Date/Time: 1/23/06 1400

Received By: [Signature] Company: MSL
Signature/Printed Name: Steve Matheny / MSL Date/Time: 01/23/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/23/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

☆ = Archive frozen

Shipment Method: Federal Overhaul
Preservation: ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Organisms				
1	GL-DRL-12-070-072	1/23/06	Salmonad	1	X				☆
2	GL-DRL-12-074-076			1	X				☆
3	GL-DRL-12-082-084			1	X				☆
4	GL-DRL-12-086-088			1	X				☆
5	GL-DRL-12-094-096			1	X				☆
6	GL-DRL-12-098-100			1	X				☆
7	GL-DRL-12-106-108			1	X				☆
8	GL-DRL-12-110-112			1	X				☆
9	GL-DRL-12-118-120			1	X				☆
10	GL-DRL-12-122-124			1	X				☆
11	GL-DRL-12-130-132			1	X				☆
12	GL-DRL-12-134-136			1	X				☆
13	GL-DRL-12-142-144			1	X				☆
14	GL-DRL-12-146-148			1	X				☆
15									

Relinquished By: L.S. Binkley Company: MSL
Signature/Printed Name: L.S. Binkley Date/Time: 1/23/06 1400

Received By: MSL Company: MSL
Signature/Printed Name: MSL Date/Time: 01/23/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date: 1-24-06



... Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name: Gel Cores

Project Manager: Linda Bingley

Phone Number: 360 468 7000

Shipment Method: FedEx

Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					ORGANICS				
1	GC-ORG-21 002-004	1/24/06	Sediment	1	X				Archive Frozen
2	GC-ORG-21 006-008			1	X				
3	GC-ORG-21 010-012			1	X				
4	GC-ORG-21 014-016			1	X				
5	GC-ORG-21 018-020			1	X				
6	GC-ORG-21 022-024			1	X				
7	GC-ORG-21 026-028			1	X				
8	GC-ORG-21 030-032			1	X				
9	GC-ORG-21 034-036			1	X				
10	GC-ORG-21 038-040			1	X				
11	GC-ORG-21 042-044			1	X				
12	GC-ORG-21 046-048			1	X				
13	GC-ORG-21 050-052			1	X				
14	GC-ORG-21 054-056			1	X				
15	GC-ORG-21 060-064			1	X				

Relinquished By: L.S. Bingley Company: Battelle MSL

Signature/Printed Name: L.S. Bingley Date/Time: 1/24/06 1400

Received By: MSL Company: MSL

Signature/Printed Name: MSL Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____

Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____

Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date: 1-24-06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEL Cores

Project Manager: Linda Binger

Phone Number: 360 460-7000

Shipment Method: FedEx

Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					ORGANICS				
1	GC-ORG-21 070-072	1/24/06	Sediment	1	X				Archive Frozen
2	GC-ORG-21 074-076			1	X				
3	GC-ORG-21 032-034			1	X				
4	GC-ORG-21 036-038			1	X				
5	GC-ORG-21 074-076			1	X				
6	GC-ORG-21 098-100			1	X				
7	GC-ORG-21 106-108			1	X				
8	GC-ORG-21 110-112			1	X				
9	GC-ORG-21 118-120			1	X				
10	GC-ORG-21 132-134			1	X				
11	GC-ORG-21 130-132			1	X				
12	GC-ORG-21 134-136			1	X				
13	GC-ORG-21 142-144			1	X				
14	GC-ORG-21 146-148			1	X				
15	GC-ORG-21 MF			1	X				

Relinquished By:

Company:

L.S. Dwyer / J.S. Dwyer

1/24/06 1600

Received By:

Company:

MSL

2/25/06 1100

Relinquished By:

Company:

Received By:

Company:

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date: 1/24/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: Lowanus Canal
Project Manager: Steve Mathias
Phone Number: 781-681-5000 ext 103
Shipment Method: Fed Ex
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Organics				
1	GL-ORCA-87-003-204	1/24/06	Substrate	1					Archive frozen
2	GL-ORCA-87-006-038			1					
3	GL-ORCA-87-010-012			1					
4	GL-ORCA-87-014-016			1					
5	GL-ORCA-87-018-018			1					
6	GL-ORCA-87-038-038			1					
7	GL-ORCA-87-038-038			1					
8	GL-ORCA-87-030-032			1					
9	GL-ORCA-87-032-032			1					
10	GL-ORCA-87-038-040			1					
11	GL-ORCA-87-048-044			1					
12	GL-ORCA-87-044-048			1					collected 1/25/06 stored separately
13	GL-ORCA-87-050-052			1					
14	GL-ORCA-87-058-060			1					
15	GL-ORCA-87-060-064			1					

Relinquished By: L. S. Mathias Company: Battelle MSL
Signature/Printed Name: L. S. Mathias Date/Time: 1/24/06 1600

Received By: Steve Mathias Company: MSL
Signature/Printed Name: Steve Mathias Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527

Sample No(s): 150-183

Project Manager: Bungler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: <u>Sediment</u>		WP# <u>W75789</u>
Yes	No	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Navy-type Project (requires high-level sample tracking procedures)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Filter Samples: <u>Amount</u> <u>Entire sample</u> <u>Half of sample</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Special instructions: _____

Sample Preservation Instructions:

Date To Archive: _____

Date To Dispose: See Sims

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes	No	N/A	Indicate in Appropriate Box
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Was a custody seal present?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Was the custody seal intact?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$? <u>3.7</u> $^\circ\text{C}$ (if multiple coolers, note temp. of each) _____ $^\circ\text{C}$
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Were <u>all</u> chain of custody forms signed and dated?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain): _____

Container type:

TeflonPolyGlassSpex

Other: _____

Notes: _____

Completed By: [Signature]Date/Time: 01/26/06 1330

SAMPLE PRESERVATION

- ☒ Sample(s) were preserved at MSL
- ☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
- ☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____
- ☐ Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type: ☐0.2% HNO₃

Notes: _____

☐

0.5% HCl (Hg samples)

Notes: _____

☒

Refrigerate/Freeze

Notes: Deep green, outside green (see Login)☐

Other

Notes: _____

Completed By: [Signature]Date/Time: 01/26/06 1330

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/25/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

* = Above Field Free Ben

Project Name: GEL Cores
Project Manager: Linda Binger
Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GL-12AD-87-052-054		sediment	1	X			2527-151	*
2	GL-12AD-87-054-056		sediment	1	X			2527-152	
3	GL-12AD-87-056-058		sediment	1	X			2527-153	*
4	GL-12AD-87-060-062		sediment	1	X			2527-154	
5	GL-12AD-87-064-066		sediment	1	X			2527-155	*
6	GL-12AD-87-066-068		sediment	1	X			2527-156	
7	GL-12AD-87-068-070		sediment	1	X			2527-157	*
8	GL-12AD-87-072-074		sediment	1	X			2527-158	
9	GL-12AD-87-076-078		sediment	1	X			2527-159	*
10	GL-12AD-87-078-080		sediment	1	X			2527-160	
11	GL-12AD-87-080-082		sediment	1	X			2527-161	*
12	GL-12AD-87-084-086		sediment	1	X			2527-162	
13	GL-12AD-87-088-090		sediment	1	X			2527-163	*
14	GL-12AD-87-090-092		sediment	1	X			2527-164	
15	GL-12AD-87-092-094		sediment	1	X			2527-165	*

Relinquished By: [Signature] Company: Battelle/MSL
Signature/Printed Name: Linda S. Binger Date/Time: 1/25/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: W. H. H. H. H. Date/Time: 01/25/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/25/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

* = Archive Frozen

Project Name: GEI Cores

Project Manager: Linda Bingle

Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight

Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
1	GL-12A0-87-096-048		sediment	1	Pb210 Cs137	Organics	2527-166	
2	GL-12A0-87-100-102		sediment	1			2527-167	*
3	GL-12A0-87-103-004		sediment	1			2527-168	
4	GL-12A0-87-104-006		sediment	1			2527-169	*
5	GL-12A0-87-108-110		sediment	1			2527-170	
6	GL-12A0-87-112-114		sediment	1			2527-171	*
7	GL-12A0-87-114-116		sediment	1			2527-172	
8	GL-12A0-87-116-118		sediment	1			2527-173	*
9	GL-12A0-87-120-122		sediment	1			2527-174	
10	GL-12A0-87-124-126		sediment	1			2527-175	*
11	GL-12A0-87-126-128		sediment	1			2527-176	
12	GL-12A0-87-128-130		sediment	1			2527-177	*
13	GL-12A0-87-132-134		sediment	1			2527-178	
14	GL-12A0-87-136-138		sediment	1			2527-179	*
15	GL-12A0-87-138-140		sediment	1			2527-180	

Relinquished By:

Company:

Battelle/MSL

Linda S. Bingle

Signature/Printed Name

Date/Time

Received By:

Company:

MSL

Signature/Printed Name

Date/Time

Relinquished By:

Company:

Date/Time

Signature/Printed Name

Date/Time

Received By:

Company:

Date/Time

Signature/Printed Name

Date/Time

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/25/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Binger
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

* Archive For 30 years

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	6C-12A0-87-140-142	Sediment	sediment	1	X			2527-181	X
2	6C-12A0-87-144-146	Sediment	sediment	1	X			2527-182	
3	6C-12A0-87-148-150	Sediment	sediment	1	X			2527-183	
4	6C-12A0-87-044-046	Sediment	sediment	1	X			2527-184	
5	6C-12A0-87-048-050	Sediment	sediment	1	X			2527-185	
6			sediment					2527-186	
7			sediment					2527-187	
8			sediment					2527-188	
9			sediment					2527-189	
10			sediment					2527-190	
11			sediment					2527-191	
12			sediment					2527-192	
13			sediment					2527-193	
14			sediment					2527-194	
15			sediment					2527-195	

Relinquished By: Linda S. Binger Company: Battelle/MSL
Signature/Printed Name: Linda S. Binger Date/Time: 1/25/06 1100

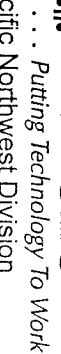
Received By: MLF H. Gahan Company: MSL
Signature/Printed Name: MLF H. Gahan Date/Time: 01/26/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

(SOP # MSL-A-001 & MSL-A-002)

1/28/04



GET OVER

1. Mada Bida / 5

3608-460-7000

1-26-38

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Test Parameters

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Line	Field Sample ID	Collection Date/Time	Matrix	No. of C	OR	Laboratory ID	Observations/Comments
1	AL-0126-87-046-048	1/25/06	Sediment	1	X		Archive Freezer
2	AL-0126-87-050-052			1	X		
3	AL-0126-87-058-060			1	X		
4	AL-0126-87-062-064			1	X		
5	AL-0126-87-070-072			1	X		
6	AL-0126-87-074-076			1	X		
7	AL-0126-87-082-084			1	X		
8	AL-0126-87-086-088			1	X		
9	AL-0126-87-094-096			1	X		
10	AL-0126-87-098-100			1	X		
11	AL-0126-87-106-108			1	X		
12	AL-0126-87-110-112			1	X		
13	AL-0126-87-118-120			1	X		
14	AL-0126-87-122-124			1	X		
15	AL-0126-87-130-132			1	X		

Summary:

15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047

Received By:

9

1151

Signature/Printed Name

8-2-1-8

Date/Time 10:10-10:20

Signature/Printed Name _____

1

Date/Time 2/2/06

Relinquished By:

Company: _____

Received By:

Company _____

Signature/Printed Name

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Date/Time

Signature/Printed Name _____

Date/Time

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/25/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: CAT Mass
Project Manager: Linda Dwyer
Phone Number: 360-460-7000
Shipment Method: Fed Ex
Preservation: Ice

Project Manager: <u>Linda Binger</u>				Marine Sciences Laboratory					
Phone Number: <u>360-460-9000</u>				1529 West Sequim Bay Road					
Shipment Method: <u>Fed Ex</u>				Sequim, Washington 98382					
Preservation: <u>TEE</u>									
Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	CE-026-87-134136	1/25/06	Sealwood	1	X				Active F1022
2	CE-026-87-143144	↓	↓	1	X				
3	CE-026-87-146148			1	X				↓
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

Relinquished By: A.S. Single Company: Battelle MSL
Signature/Printed Name: A.S. Single Date/Time: 1/25/06 1600

Received By: Michelle M. Graham Company: MSL
Signature/Printed Name: Michelle M. Graham Date/Time: 01/26/06 1100

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527 Sample No(s): 184-229Project Manager: Bungler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: SedimentWP# W95789

- Yes No
- ☐ ☒ Navy type Project (requires high-level sample tracking procedures)
- ☐ ☒ Filter Samples: Amount Entire sample Half of sample
- ☒ ☐ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
- ☐ ☒ Special instructions: _____

Sample Preservation Instructions: _____

Date To Archive: _____

Date To Dispose: See Lias

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

- Yes No N/A Indicate in Appropriate Box
- ☐ ☒ ☐ Was a custody seal present?
- ☐ ☐ ☒ Was the custody seal intact?
- ☒ ☐ ☐ Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$? 5.0 $^\circ\text{C}$
(if multiple coolers, note temp. of each) $^\circ\text{C}$
- ☐ ☐ ☒ Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?
Comment/Remedy: _____
- ☒ ☐ ☐ Were all chain of custody forms signed and dated?
- ☐ ☒ ☐ Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain): _____

Container type:

Teflon Poly Glass Spec

Other: _____

Notes: _____

Completed By: [Signature]Date/Time: 01/27/06 1200

SAMPLE PRESERVATION

- ☒ Sample(s) were preserved at MSL
- ☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
- ☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____
- ☐ Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type: ☐ 0.2% HNO₃

Notes: _____

☐ 0.5% HCl (Hg samples)

Notes: _____

☒ Refrigerate/FreezeNotes: Deep freeze; outside freezer☐ Other

Notes: _____

Completed By: [Signature]Date/Time: 01/27/06 1200

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/24/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1			sediment				2527-181	
2			sediment				2527-182	
3			sediment				2527-183	
4	GL-RAD-60-000-002	1/24/06	sediment	1	X		2527-184	
5	GL-RAD-60-004-006		sediment	1	X		2527-185	
6	GL-RAD-60-008-010		sediment	1	X		2527-186	
7	GL-RAD-60-012-014		sediment	1	X		2527-187	
8	GL-RAD-60-014-018		sediment	1	X		2527-188	
9	GL-RAD-60-020-022		sediment	1	X		2527-189	
10	GL-RAD-60-024-026		sediment	1	X		2527-190	
11	GL-RAD-60-028-030		sediment	1	X		2527-191	
12	GL-RAD-60-032-034		sediment	1	X		2527-192	
13	GL-RAD-60-036-038		sediment	1	X		2527-193	
14	GL-RAD-60-040-042		sediment	1	X		2527-194	
15	GL-RAD-60-044-046		sediment	1	X		2527-195	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/24/06 1400

Received By: MSL Company: MSL
Signature/Printed Name: MSL Date/Time: 01/23/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/26/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

* = Arclene frozen

Project Name: GEI Cores
Project Manager: Linda Binger
Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GL-12A0-60-048-050	1/26/06	sediment	1	X			2527-196	
2	GL-12A0-60-052-054		sediment	1	X			2527-197	*
3	GL-12A0-60-054-056		sediment	1	X			2527-198	
4	GL-12A0-60-056-058		sediment	1	X			2527-199	*
5	GL-12A0-60-060-062		sediment	1	X			2527-200	
6	GL-12A0-60-064-066		sediment	1	X			2527-201	*
7	GL-12A0-60-066-068		sediment	1	X			2527-202	
8	GL-12A0-60-068-070		sediment	1	X			2527-203	*
9	GL-12A0-60-070-074		sediment	1	X			2527-204	
10	GL-12A0-60-076-078		sediment	1	X			2527-205	*
11	GL-12A0-60-078-080		sediment	1	X			2527-206	
12	GL-12A0-60-080-082		sediment	1	X			2527-207	*
13	GL-12A0-60-084-086		sediment	1	X			2527-208	
14	GL-12A0-60-088-090		sediment	1	X			2527-209	*
15	GL-12A0-60-090-092		sediment	1	X			2527-210	

Relinquished By: Linda S. Binger Company: Battelle/MSL
Signature/Printed Name: Linda S. Binger Date/Time: 1/26/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/27/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/26/06



Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Binger
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pd210 Cs137	Organics			
1	GL-RAO-60-093-094	1/26/06	sediment	1	X			2527-211	✓
2	GL-RAO-60-094-098		sediment	1	X			2527-212	
3	GL-RAO-60-100-102		sediment	1	X			2527-213	✓
4	GL-RAO-60-102-104		sediment	1	X			2527-214	
5	GL-RAO-60-104-106		sediment	1	X			2527-215	✓
6	GL-RAO-60-108-110		sediment	1	X			2527-216	
7	GL-RAO-60-112-114		sediment	1	X			2527-217	✓
8	GL-RAO-60-114-116		sediment	1	X			2527-218	
9	GL-RAO-60-116-118		sediment	1	X			2527-219	✓
10	GL-RAO-60-120-122		sediment	1	X			2527-220	
11	GL-RAO-60-124-126		sediment	1	X			2527-221	✓
12	GL-RAO-60-124-128		sediment	1	X			2527-222	
13	GL-RAO-60-128-130		sediment	1	X			2527-223	✓
14	GL-RAO-60-132-134		sediment	1	X			2527-224	
15	GL-RAO-60-134-138		sediment	1	X			2527-225	✓

Relinquished By: Linda S. Binger Company: Battelle/MSL
Signature/Printed Name: Linda S. Binger Date/Time: 1/26/06 1600

Received By: Michael M. Galan Company: MSL
Signature/Printed Name: Michael M. Galan Date/Time: 01/27/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/24/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores

Project Manager: Linda Bingle

Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight

Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GL-1240-40-138-140	1/24/06	sediment	1	X			2527-226	
2	GL-1240-40-140-42		sediment	1	X			2527-227	
3	GL-1240-40-144-146		sediment	1	X			2527-228	
4	GL-1240-40-148-150		sediment	1	X			2527-229	
5			sediment	1	X			2527-230	
6			sediment	1	X			2527-231	
7			sediment	1	X			2527-232	
8			sediment	1	X			2527-233	
9			sediment	1	X			2527-234	
10			sediment	1	X			2527-235	
11			sediment	1	X			2527-236	
12			sediment	1	X			2527-237	
13			sediment	1	X			2527-238	
14			sediment	1	X			2527-239	
15			sediment	1	X			2527-240	

Relinquished By:

Company:

Battelle/MSL

Linda S. Bingle

Signature/Printed Name

Date/Time

1/24/06 1400

Received By:

Company:

MSL

Signature/Printed Name

Date/Time

01/23/06 1200

Relinquished By:

Company:

Signature/Printed Name

Date/Time

Received By:

Company:

Signature/Printed Name

Date/Time

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/26/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name:

GET CORES

Project Manager:

Linda Binger

Phone Number:

360-460-7000

Shipment Method:

Fed Ex

Preservation:

ICE

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	GC-026-60-038-036	1/26/06	Seawater	1	X				Archive Frozen
2	GC-026-60-038-038			1	X				
3	GC-026-60-010-012			1	X				
4	GC-026-60-014-016			1	X				
5	GC-026-60-018-020			1	X				
6	GC-026-60-022-024			1	X				
7	GC-026-60-026-028			1	X				
8	GC-026-60-030-032			1	X				
9	GC-026-60-034-036			1	X				
10	GC-026-60-038-040			1	X				
11	GC-026-60-042-044			1	X				
12	GC-026-60-046-048			1	X				
13	GC-026-60-050-052			1	X				
14	GC-026-60-058-060			1	X				
15	GC-026-60-062-064			1	X				

Relinquished By:

Company:

Battelle MSL

Signature/Printed Name

1/26/06 1400

Received By:

Company:

MSL

Signature/Printed Name

01/23/06 1200

Relinquished By:

Company:

Signature/Printed Name

Date/Time

Received By:

Company:

Signature/Printed Name

Date/Time

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SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/26/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name: CEI Press
 Project Manager: Linda Bingle
 Phone Number: 360-460-7000
 Shipment Method: Fed Ex
 Preservation: FE

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Organics				
1	GL-0124-b0-070-072	1/26/06	Sediment	1	X				Active Freeze
2	GL-0124-b0-074-076				X				
3	GL-0124-b0-082-084				X				
4	GL-0124-b0-086-088				X				
5	GL-0124-b0-094-096				X				
6	GL-0124-b0-098-100				X				
7	GL-0124-b0-106-108				X				
8	GL-0124-b0-110-112				X				
9	GL-0124-b0-118-120				X				
10	GL-0124-b0-122-124				X				
11	GL-0124-b0-130-132				X				
12	GL-0124-b0-134-136				X				
13	GL-0124-b0-142-144				X				
14	GL-0124-b0-146-148				X				
15									

Relinquished By: LS Bingle Company: Battelle MSL
 Signature/Printed Name: LS Bingle Date/Time: 1/26/06 1100

Received By: MSL Company: MSL
 Signature/Printed Name: MSL Date/Time: 01/23/06 1200

Relinquished By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527Sample No(s): 230-08Project Manager: Bingler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: SedimentWP# W 75789

Yes

No

☐☒

Navy-type Project (requires high-level sample tracking procedures)

☐☒

Filter Samples:

AmountEntire sampleHalf of sample☒☐

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)

☐☒

Special instructions:

Sample Preservation Instructions:

Date To Archive:

Date To Dispose: See Lims

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Was a custody seal present?

☐☐☒

Was the custody seal intact?

☒☐☐Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$? # 1-5.3 # 3-2.4
(if multiple coolers, note temp. of each) # 2-5.1 # 4-2.5 # 5-2.1☐☐☒

Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?

Comment/Remedy:

☒☐☐Were all chain of custody forms signed and dated?☐☒☐

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain):

Container type:

TeflonPolyGlassSpex

Other:

Notes:

Completed By: [Signature]

Date/Time:

01/31/05 1200

SAMPLE PRESERVATION

☒

Sample(s) were preserved at MSL

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:

☐0.2% HNO₃

Notes:

☐

0.5% HCl (Hg samples)

Notes:

☒

Refrigerate/Freeze

Notes:

☐

Other:

Notes:

Deep frozen & outside frozenCompleted By: [Signature]

Date/Time:

01/31/05 1600

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/27/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1			sediment					2527-226	
2			sediment					2527-227	
3			sediment					2527-228	
4			sediment					2527-229	
5	<u>GL-1240-88-000-002</u>	<u>1/27/06</u>	sediment	<u>1</u>	<u>X</u>			<u>2527-230</u>	
6	<u>GL-1240-88-004-006</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-231</u>	
7	<u>GL-1240-88-008-010</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-232</u>	
8	<u>GL-1240-88-012-014</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-233</u>	
9	<u>GL-1240-88-016-018</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-234</u>	
10	<u>GL-1240-88-020-022</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-235</u>	
11	<u>GL-1240-88-024-026</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-236</u>	
12	<u>GL-1240-88-028-030</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-237</u>	
13	<u>GL-1240-88-032-034</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-238</u>	
14	<u>GL-1240-88-036-038</u>		sediment	<u>1</u>	<u>X</u>			<u>2527-239</u>	
15	<u>GL-1240-88-040-042</u>	<u>✓</u>	sediment	<u>1</u>	<u>X</u>			<u>2527-240</u>	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/27/06 1600

Received By: MSL Company: MSL
Signature/Printed Name: MSL Date/Time: 01/31/05 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/27/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

* = Active Frozen

Project Name: GEI Cores
Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers			Test Parameters			Laboratory ID	Observations/Comments
							Pb210 Cs137	Organics			
1	GL-RAO-88-044-046	1/27/06	sediment	1			X			2527-241	
2	GL-RAO-88-048-050		sediment	1			X			2527-242	
3	GL-RAO-88-052-054		sediment	1			X			2527-243	*
4	GL-RAO-88-054-056		sediment	1			X			2527-244	
5	GL-RAO-88-056-058		sediment	1			X			2527-245	*
6	GL-RAO-88-060-062		sediment	1			X			2527-246	
7	GL-RAO-88-064-066		sediment	1			X			2527-247	*
8	GL-RAO-88-068-070		sediment	1			X			2527-248	
9	GL-RAO-88-072-074		sediment	1			X			2527-249	*
10	GL-RAO-88-076-078		sediment	1			X			2527-250	
11	GL-RAO-88-080-082		sediment	1			X			2527-251	*
12	GL-RAO-88-084-086		sediment	1			X			2527-252	
13	GL-RAO-88-088-090		sediment	1			X			2527-253	*
14	GL-RAO-88-092-094		sediment	1			X			2527-254	
15	GL-RAO-88-096-098		sediment	1			X			2527-255	*

Relinquished By: Linda S. Bingler Company: Battelle/MSL
Signature/Printed Name: [Signature] Date/Time: 1/27/06 1400

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/27/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

** - Archive Frozen*

Project Name: GEL Cores
Project Manager: Linda Binger
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers		Test Parameters		Laboratory ID	Observations/Comments
						Pb210 Cs137	Organics		
1	GL-PCA0-88-090-092	1/27/06	sediment					2527-256	
2	GL-PCA0-88-092-094		sediment					2527-257	
3	GL-PCA0-88-094-098		sediment					2527-258	
4	GL-PCA0-88-100-102		sediment					2527-259	
5	GL-PCA0-88-102-104		sediment					2527-260	
6	GL-PCA0-88-104-106		sediment					2527-261	
7	GL-PCA0-88-108-110		sediment					2527-262	
8	GL-PCA0-88-112-114		sediment					2527-263	
9	GL-PCA0-88-114-116		sediment					2527-264	
10	GL-PCA0-88-116-118		sediment					2527-265	
11	GL-PCA0-88-120-122		sediment					2527-266	
12	GL-PCA0-88-124-126		sediment					2527-267	
13	GL-PCA0-88-126-128		sediment					2527-268	
14	GL-PCA0-88-128-130		sediment					2527-269	
15	GL-PCA0-88-132-134		sediment					2527-270	

Relinquished By: Linda S. Binger Company: Battelle/MSL
Signature/Printed Name: Linda S. Binger Date/Time: 1/30/06 1400

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/27/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

A. Arduini

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000

Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	66-12A0-88-134-138	1/27/06	sediment	1	X		2527-271	
2	66-12A0-88-138-140		sediment	1	X		2527-272	
3	66-12A0-88-140-142		sediment	1	X		2527-273	
4	66-12A0-88-144-146		sediment	1	X		2527-274	
5	66-12A0-88-148-150		sediment	1	X		2527-275	
6			sediment				2527-276	
7			sediment				2527-277	
8			sediment				2527-278	
9			sediment				2527-279	
10			sediment				2527-280	
11			sediment				2527-281	
12			sediment				2527-282	
13			sediment				2527-283	
14			sediment				2527-284	
15			sediment				2527-285	

Relinquished By: *Linda S. Bingle* Company: Battelle/MSL
Signature/Printed Name: *Linda S. Bingle* Date/Time: 1/30/06 11:30 AM

Received By: *W. McGowan* Company: MSL
Signature/Printed Name: *W. McGowan* Date/Time: 1/31/06 12:00 PM

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/28/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1			sediment				2527-274	
2			sediment				2527-272	
3			sediment				2527-273	
4			sediment				2527-274	
5			sediment				2527-275	
6	GL-PCA0-31-000-003	1/28/06	sediment	1	X		2527-276	
7	GL-PCA0-31-004-006		sediment	1	X		2527-277	
8	GL-PCA0-31-008-010		sediment	1	X		2527-278	
9	GL-PCA0-31-013-014		sediment	1	X		2527-279	
10	GL-PCA0-31-016-018		sediment	1	X		2527-280	
11	GL-PCA0-31-020-022		sediment	1	X		2527-281	
12	GL-PCA0-31-024-026		sediment	1	X		2527-282	
13	GL-PCA0-31-028-030		sediment	1	X		2527-283	
14	GL-PCA0-31-032-034		sediment	1	X		2527-284	
15	GL-PCA0-31-036-038		sediment	1	X		2527-285	

Relinquished By:
Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle
Date/Time: 1/30/06 1:30 PM

Received By:
Company: MSL
Signature/Printed Name: H11 FHC Gokan
Date/Time: 01/31/06 1200

Relinquished By: _____
Company: _____
Signature/Printed Name: _____
Date/Time: _____

Received By: _____
Company: _____
Signature/Printed Name: _____
Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/28/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
** - Arlene Brown*

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers		Test Parameters		Laboratory ID	Observations/Comments
						Pb210 Cs137	Organics		
1	GC-RAO-31-040-042	<u>1/28/06</u>	sediment	1		X		2527-286	
2	GC-RAO-31-044-046		sediment	1		X		2527-287	
3	GC-RAO-31-048-050		sediment	1		X		2527-288	
4	GC-RAO-31-052-054		sediment	1		X		2527-289	
5	GC-RAO-31-054-056		sediment	1		X		2527-290	
6	GC-RAO-31-056-058		sediment	1		X		2527-291	
7	GC-RAO-31-060-062		sediment	1		X		2527-292	
8	GC-RAO-31-064-066		sediment	1		X		2527-293	
9	GC-RAO-31-066-068		sediment	1		X		2527-294	
10	GC-RAO-31-068-070		sediment	1		X		2527-295	
11	GC-RAO-31-072-074		sediment	1		X		2527-296	
12	GC-RAO-31-076-078		sediment	1		X		2527-297	
13	GC-RAO-31-078-080		sediment	1		X		2527-298	
14	GC-RAO-31-080-082		sediment	1		X		2527-299	
15	GC-RAO-31-084-086		sediment	1		X		2527-300	

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Bingle 1/30/06 1600
Signature/Printed Name Date/Time

Received By: [Signature] Company: MSL
Sharon M. Heston 01/31/06 1200
Signature/Printed Name Date/Time

Relinquished By: _____ Company: _____
Signature/Printed Name Date/Time

Received By: _____ Company: _____
Signature/Printed Name Date/Time

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/28/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
* Archive #1020

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	GL-PCA0-31-088-090	1/28/06	sediment	1	X		2527-301	*
2	GL-PCA0-31-090-092		sediment	1	X		2527-302	
3	GL-PCA0-31-093-094		sediment	1	X		2527-303	*
4	GL-PCA0-31-096-098		sediment	1	X		2527-304	
5	GL-PCA0-31-100-102		sediment	1	X		2527-305	*
6	GL-PCA0-31-102-104		sediment	1	X		2527-306	
7	GL-PCA0-31-104-106		sediment	1	X		2527-307	*
8	GL-PCA0-31-108-110		sediment	1	X		2527-308	
9	GL-PCA0-31-112-114		sediment	1	X		2527-309	*
10	GL-PCA0-31-114-116		sediment	1	X		2527-310	
11	GL-PCA0-31-116-118		sediment	1	X		2527-311	*
12	GL-PCA0-31-120-122		sediment	1	X		2527-312	
13	GL-PCA0-31-124-126		sediment	1	X		2527-313	*
14	GL-PCA0-31-126-128		sediment	1	X		2527-314	
15	GL-PCA0-31-128-130		sediment	1	X		2527-315	*

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Bingle
Signature/Printed Name: Linda S. Bingle Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/28/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Archive 8/1/06

Project Name: Gel Cores
Project Manager: Linda Binger
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	618-RAAD-31-132-134	1/28/06	sediment	1	X	1/28/06		2527-316	A
2	618-RAAD-31-136-138		sediment	1	X			2527-317	
3	618-RAAD-31-138-140		sediment	1	X			2527-318	
4	618-RAAD-31-140-142		sediment	1	X			2527-319	A
5	618-RAAD-31-144-146		sediment	1	X			2527-320	A
6	618-RAAD-31-148-150		sediment	1	X			2527-321	A
7			sediment		X	1-28-06		2527-322	
8			sediment					2527-323	
9			sediment					2527-324	
10			sediment					2527-325	
11			sediment					2527-326	
12			sediment					2527-327	
13			sediment					2527-328	
14			sediment					2527-329	
15			sediment					2527-330	

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Binger
Signature/Printed Name: Linda S. Binger Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: Michael H. Hatcher Date/Time: 1/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/29/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1			sediment				2527-316	
2			sediment				2527-317	
3			sediment				2527-318	
4			sediment				2527-319	
5			sediment				2527-320	
6			sediment				2527-321	
7	AL-PAO-78-000-002	1/29/06	sediment	1	X		2527-322	
8	AL-PAO-78-004-006		sediment	1	X		2527-323	
9	AL-PAO-78-008-010		sediment	1	X		2527-324	
10	AL-PAO-78-012-014		sediment	1	X		2527-325	
11	AL-PAO-78-016-018		sediment	1	X		2527-326	
12	AL-PAO-78-020-022		sediment	1	X		2527-327	
13	AL-PAO-78-024-026		sediment	1	X		2527-328	
14	AL-PAO-78-028-030		sediment	1	X		2527-329	
15	AL-PAO-78-032-034		sediment	1	X		2527-330	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/30/06 1600

Received By: Michelle Galan Company: MSL
Signature/Printed Name: Michelle Galan Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/29/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

* = Ardene Jorgensen

Project Name: GEI Cores
Project Manager: Linda Bingler
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers		Test Parameters		Laboratory ID	Observations/Comments
						Pb210	Cs137		
1	GL-12A0-78-036-038	1/29/06	sediment	1	1	✓		2527-331	
2	GL-12A0-78-040-042		sediment	1	1			2527-332	
3	GL-12A0-78-044-046		sediment	1	1			2527-333	
4	GL-12A0-78-048-050		sediment	1	1			2527-334	
5	GL-12A0-78-052-054		sediment	1	1			2527-335	
6	GL-12A0-78-054-056		sediment	1	1			2527-336	
7	GL-12A0-78-056-058		sediment	1	1			2527-337	
8	GL-12A0-78-060-062		sediment	1	1			2527-338	
9	GL-12A0-78-064-066		sediment	1	1			2527-339	
10	GL-12A0-78-066-068		sediment	1	1			2527-340	
11	GL-12A0-78-068-070		sediment	1	1			2527-341	
12	GL-12A0-78-072-074		sediment	1	1			2527-342	
13	GL-12A0-78-076-078		sediment	1	1			2527-343	
14	GL-12A0-78-078-080		sediment	1	1			2527-344	
15	GL-12A0-78-080-082		sediment	1	1			2527-345	

Relinquished By: [Signature] Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingler Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: Michelle Galarza Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date:

1/29/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

✓ - Archive to go

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	GE-PAO-78-684-086	1/29/06	sediment	1	✓		2527-346	
2	GE-PAO-78-688-090		sediment	1	✓		2527-347	✓
3	GE-PAO-78-680-082		sediment	1	✓		2527-348	
4	GE-PAO-78-692-094		sediment	1	✓		2527-349	✓
5	GE-PAO-78-096-088		sediment	1	✓		2527-350	
6	GE-PAO-78-100-102		sediment	1	✓		2527-351	✓
7	GE-PAO-78-102-104		sediment	1	✓		2527-352	
8	GE-PAO-78-104-106		sediment	1	✓		2527-353	✓
9	GE-PAO-78-108-110		sediment	1	✓		2527-354	
10	GE-PAO-78-112-114		sediment	1	✓		2527-355	✓
11	GE-PAO-78-114-116		sediment	1	✓		2527-356	
12	GE-PAO-78-116-118		sediment	1	✓		2527-357	✓
13	GE-PAO-78-120-122		sediment	1	✓		2527-358	
14	GE-PAO-78-124-126		sediment	1	✓		2527-359	✓
15	GE-PAO-78-126-128		sediment	1	✓		2527-360	

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Bingle
Signature/Printed Name: Linda S. Bingle Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: Michelle Hatala Date/Time: 3/1/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/29/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
Arlene Brown

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters	Laboratory ID	Observations/Comments
1	GL-1240-78-128130	1/29/06	sediment	1	Pb210 Cs137 Organics 1-824-06	2527-361	
2	GL-1240-78-132-134		sediment	1		2527-362	
3	GL-1240-78-136-138		sediment	1		2527-363	
4	GL-1240-78-138-140		sediment	1		2527-364	
5	GL-1240-79-140-142		sediment	1		2527-365	
6	GL-1240-78-144-146		sediment	1		2527-366	
7	GL-1240-78-148-150		sediment	1		2527-367	
8			sediment			2527-368	
9			sediment			2527-369	
10			sediment			2527-370	
11			sediment			2527-371	
12			sediment			2527-372	
13			sediment			2527-373	
14			sediment			2527-374	
15			sediment			2527-375	

Relinquished By: [Signature] Company: Battelle/MSL
Linda S. Bingle
Signature/Printed Name [Signature] Date/Time 1/30/06 1600
Relinquished By: _____ Company: _____
Signature/Printed Name _____ Date/Time _____

Received By: [Signature] Company: MSL
Signature/Printed Name [Signature] Date/Time 01/31/06 1200
Received By: _____ Company: _____
Signature/Printed Name _____ Date/Time _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/29/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210	Organics	Cs137		
1			sediment					2527-361	
2			sediment					2527-362	
3			sediment					2527-363	
4			sediment					2527-364	
5			sediment					2527-365	
6			sediment					2527-366	
7			sediment					2527-367	
8	<u>4C-R40-600-604-002</u>	<u>1/29/06</u>	sediment	1	X			<u>2527-368</u>	
9	<u>4C-R40-600-604-006</u>		sediment	1	X			<u>2527-369</u>	
10	<u>4C-R40-600-608-010</u>		sediment	1	X			<u>2527-370</u>	
11	<u>4C-R40-600-612-014</u>		sediment	1	X			<u>2527-371</u>	
12	<u>4C-R40-600-616-018</u>		sediment	1	X			<u>2527-372</u>	
13	<u>4C-R40-600-620-022</u>		sediment	1	X			<u>2527-373</u>	
14	<u>4C-R40-600-624-026</u>		sediment	1	X			<u>2527-374</u>	
15	<u>4C-R40-600-628-030</u>		sediment	1	X			<u>2527-375</u>	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: Linda S. Bingle Date/Time: 1/30/06

Received By: John H. Gorman Company: MSL
Signature/Printed Name: John H. Gorman Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/29/06



... Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
Star - Archive Sample

Project Name: GEI Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters		Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics		
1	6C-12A0-600-032-034	1/29/06	sediment	1	X		2527-376	
2	6C-12A0-600-036-038		sediment	1	X		2527-377	
3	6C-12A0-600-040-042		sediment	1	X		2527-378	
4	6C-12A0-600-044-046		sediment	1	X		2527-379	
5	6C-12A0-600-048-050		sediment	1	X		2527-380	
6	6C-12A0-600-052-054		sediment	1	X		2527-381	
7	6C-12A0-600-054-056		sediment	1	X		2527-382	
8	6C-12A0-600-056-058		sediment	1	X		2527-383	
9	6C-12A0-600-060-062		sediment	1	X		2527-384	
10	6C-12A0-600-064-066		sediment	1	X		2527-385	
11	6C-12A0-600-066-068		sediment	1	X		2527-386	
12	6C-12A0-600-068-070		sediment	1	X		2527-387	
13	6C-12A0-600-072-074		sediment	1	X		2527-388	
14	6C-12A0-600-076-078		sediment	1	X		2527-389	
15	6C-12A0-600-078-080		sediment	1	X		2527-390	

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: [Signature] Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/30/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Star - Archive Series

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers		Test Parameters		Laboratory ID	Observations/Comments
1	GE-RAN-600-080-082	1/29/04	sediment	1		Pb210 Cs137	<i>1-29-06</i>	2527-391	<i>2</i>
2	GE-RAN-600-084-096		sediment	1				2527-392	
3	GE-RAN-600-088-088		sediment	1				2527-393	<i>2</i>
4	GE-RAN-600-090-092		sediment	1				2527-394	
5	GE-RAN-600-092-094		sediment	1				2527-395	<i>2</i>
6	GE-RAN-600-094-098		sediment	1				2527-396	
7	GE-RAN-600-100-102		sediment	1				2527-397	<i>2</i>
8	GE-RAN-600-102-104		sediment	1				2527-398	
9	GE-RAN-600-104-106		sediment	1				2527-399	<i>2</i>
10	GE-RAN-600-108-110		sediment	1				2527-400	
11	GE-RAN-600-112-114		sediment	1				2527-401	<i>2</i>
12	GE-RAN-600-114-116		sediment	1				2527-402	
13	GE-RAN-600-116-118		sediment	1				2527-403	<i>2</i>
14	GE-RAN-600-120-122		sediment	1				2527-404	
15	GE-RAN-600-124-126		sediment	1				2527-405	<i>2</i>

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: [Signature] Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 1/29/06



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Archive Boxen

Project Name: GEL Cores
Project Manager: Linda Bingle
Phone Number: 360-681-3627/360-460-7000
Shipment Method: Fed Ex overnight
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Pb210 Cs137	Organics			
1	GC-1240-600-126-138	<u>1/29/06</u>	sediment	1	X			2527-406	
2	GC-1240-600-128-130		sediment	1	X			2527-407	
3	GC-1240-600-132-134		sediment	1	X			2527-408	
4	GC-1240-600-136-138		sediment	1	X			2527-409	
5	GC-1240-600-138-140		sediment	1	X			2527-410	
6	GC-1240-600-142-144		sediment	1	X			2527-411	
7	GC-1240-600-144-146		sediment	1	X			2527-412	
8	GC-1240-600-148-150		sediment	1	X			2527-413	
9			sediment					2527-414	
10			sediment					2527-415	
11			sediment					2527-416	
12			sediment					2527-417	
13			sediment					2527-418	
14			sediment					2527-419	
15			sediment					2527-420	

not collected

Relinquished By: Linda S. Bingle Company: Battelle/MSL
Signature/Printed Name: [Signature] Date/Time: 1/30/06 1200

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/27/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name: GET Cores
 Project Manager: Linda Binkley
 Phone Number: 360-466-7000
 Shipment Method: Fed ex
 Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	GC-019-88-002-004	1/27/06	Seawater	1	X				Archive for
2	GC-019-88-006-008			1	X				
3	GC-019-88-010-012			1	X				
4	GC-019-88-014-016			1	X				
5	GC-019-88-018-020			1	X				
6	GC-019-88-022-024			1	X				
7	GC-019-88-026-028			1	X				
8	GC-019-88-030-032			1	X				
9	GC-019-88-034-036			1	X				
10	GC-019-88-038-040			1	X				
11	GC-019-88-042-044			1	X				
12	GC-019-88-046-048			1	X				
13	GC-019-88-050-052			1	X				
14	GC-019-88-054-056			1	X				
15	GC-019-88-062-064			1	X				

Relinquished By: L. Binkley Company: Battelle MSL
 Signature/Printed Name: L. Binkley Date/Time: 1/27/06 1400

Received By: [Signature] Company: MSL
 Signature/Printed Name: [Signature] Date/Time: 01/27/06 1200

Relinquished By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
 Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date: 1/27/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GET Cores
Project Manager: Linda Kingle
Phone Number: 360-466-7000
Shipment Method: Fed Ex
Preservation: TCU

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Organics				
1	AL-019-88-076-072	1/27/06	Sediment	1	X				Archive frozen
2	AL-019-88-074-076			1	X				
3	AL-019-88-082-084			1	X				
4	AL-019-88-086-088			1	X				
5	AL-019-88-094-096			1	X				
6	AL-019-88-098-100			1	X				
7	AL-016-88-102-103			1	X				
8	AL-016-88-112-112			1	X				
9	AL-016-88-118-120			1	X				
10	AL-016-88-122-124			1	X				
11	AL-016-88-130-132			1	X				
12	AL-016-88-134-136			1	X				
13	AL-016-88-142-144			1	X				
14	AL-016-88-146-148			1	X				
15									

Relinquished By: L.S. Baker Company: Battelle MSC
Signature/Printed Name: [Signature] Date/Time: 1/30/06 1:30 PM

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/28/06



Putting Technology To Work

Pacific Northwest Division

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

Project Name: GET AMS
 Project Manager: Linda Smyle
 Phone Number: 360-460-7000
 Shipment Method: Fed Ex
 Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	GL-0126-31-003-004	1/28/06	Sealant	1	X				Active frozen
2	GL-0126-31-006-003			1	X				
3	GL-0126-31-010-012			1	X				
4	GL-0126-31-014-018			1	X				
5	GL-0126-31-018-020			1	X				
6	GL-0126-31-022-034			1	X				
7	GL-0126-31-026-038			1	X				
8	GL-0126-31-030-032			1	X				
9	GL-0126-31-034-036			1	X				
10	GL-0126-31-038-040			1	X				
11	GL-0126-31-042-044			1	X				
12	GL-0126-31-046-048			1	X				
13	GL-0126-31-050-052			1	X				
14	GL-0126-31-054-060			1	X				
15	GL-0126-31-062-064			1	X				

Relinquished By: Battelle MSL
 Signature/Printed Name: L.S. Smyle / Linda Smyle
 Date/Time: 1/28/06 1600

Received By: MSL
 Signature/Printed Name: Michael M. Hagan
 Date/Time: 01/31/06 1200

Relinquished By: _____
 Signature/Printed Name: _____
 Date/Time: _____

Received By: _____
 Signature/Printed Name: _____
 Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/28/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: 45T Lemo
Project Manager: Linda Boyer
Phone Number: 360-460-7000
Shipment Method: Fed Ex
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					Organics				
1	46-019-31-070-072	1/28/06	Seawater	1	X				
2	46-019-31-074-076			1	X				
3	46-019-31-082-084			1	X				
4	46-019-31-086-088			1	X				
5	46-019-31-094-096			1	X				
6	46-019-31-098-100			1	X				
7	46-019-31-102-108			1	X				
8	46-019-31-110-112			1	X				
9	46-019-31-118-120			1	X				
10	46-019-31-122-124			1	X				
11	46-019-31-130-132			1	X				
12	46-019-31-134-136			1	X				
13	46-019-31-138-140			1	X				
14	46-019-31-142-148			1	X				
15									

Relinquished By: L. S. Boyer Company: Battelle MSL
Signature/Printed Name: [Signature] Date/Time: 1/30/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: Michelle Gahan Date/Time: 1/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/29/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GET CES
Project Manager: Linda Binger
Phone Number: 360-468-7000
Shipment Method: Fed Ex
Preservation: ICE

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					organics				
1	GC-019-78-002-004	1/29/06	Sediment	1	X				Archive Frozen
2	GC-019-78-006-008			1	X				
3	GC-019-78-010-012			1	X				
4	GC-019-78-014-016			1	X				
5	GC-019-78-018-020			1	X				
6	GC-019-78-022-024			1	X				
7	GC-019-78-026-028			1	X				
8	GC-019-78-030-032			1	X				
9	GC-019-78-034-036			1	X				
10	GC-019-78-038-040			1	X				
11	GC-019-78-042-044			1	X				
12	GC-019-78-046-048			1	X				
13	GC-019-78-050-052			1	X				
14	GC-019-78-054-056			1	X				
15	GC-019-78-060-064			1	X				

Relinquished By: L.S. Binger Company: Battelle MSL
Signature/Printed Name: [Signature] Date/Time: 1/29/06 1600

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 1/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/29/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: GET Core
Project Manager: Linda Brubaker
Phone Number: 360-460-7000
Shipment Method: Fed Ex
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
					organics				
1	CC-019-78-070-072	1/29/06	Sediment	1	X				Archive frozen
2	CC-019-78-074-076			1	X				
3	CC-019-78-082-084			1	X				
4	CC-019-78-086-088			1	X				
5	CC-019-78-094-096			1	X				
6	CC-019-78-098-100			1	X				
7	CC-019-78-106-108			1	X				
8	CC-019-78-110-112			1	X				
9	CC-019-78-118-120			1	X				
10	CC-019-78-122-124			1	X				
11	CC-019-78-130-132			1	X				
12	CC-019-78-134-136			1	X				
13	CC-019-78-142-144			1	X				
14	CC-019-78-146-148			1	X				
15									

Relinquished By: L.S. Brubaker Company: MSL
Signature/Printed Name: L.S. Brubaker Date/Time: 1/30/06 1600

Received By: MSL Company: MSL
Signature/Printed Name: MSL Date/Time: 01/31/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/29/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: SEA Cares
Project Manager: Linda Binger
Phone Number: 360-460-7600
Shipment Method: Fed Ex
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	GC-ORG-600-003-04	1/29/06	Sealcoat	1	X				
2	GC-ORG-600-006-08			1	X				
3	GC-ORG-600-010-01			1	X				
4	GC-ORG-600-014-016			1	X				
5	GC-ORG-600-018-030			1	X				
6	GC-ORG-600-022-004			1	X				
7	GC-ORG-600-026-038			1	X				
8	GC-ORG-600-030-032			1	X				
9	GC-ORG-600-034-036			1	X				
10	GC-ORG-600-038-040			1	X				
11	GC-ORG-600-042-044			1	X				
12	GC-ORG-600-046-048			1	X				
13	GC-ORG-600-050-052			1	X				
14	GC-ORG-600-054-056			1	X				
15	GC-ORG-600-058-060			1	X				

Relinquished By: L.S. Binger Company: Battelle MSL
Signature/Printed Name: L.S. Binger Date/Time: 1/30/06 1400

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 2/1/06 1200

Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

SAMPLE CUSTODY RECORD

(SOP# MSL-A-001 & MSL-A-002)

Date:

1/29/06



Putting Technology To Work
Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: CRP005
Project Manager: Linda Singer
Phone Number: 360-440-7800
Shipment Method: Fed Ex
Preservation: Ice

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters			Laboratory ID	Observations/Comments
1	GC-019 - 600-070-070	1/29/06	Sediment	1	X				
2	GC-015 - 600-074-074			1	X				
3	GC-019 - 600-082-084			1	X				
4	GC-019 - 600-084-088			1	X				
5	GC-019 - 600-094-096			1	X				
6	GC-019 - 600-098-100			1	X				
7	GC-015 - 600-104-108			1	X				
8	GC-019 - 600-110-112			1	X				
9	GC-019 - 600-118-120			1	X				
10	GC-019 - 600-130-134			1	X				
11	GC-019 - 600-130-132			1	X				
12	GC-019 - 600-134-138			1	X				
13									
14									
15									

Relinquished By: L.S. Singer / K. Singer Company: Battelle MSL
Signature/Printed Name: 1/30/06 1600 Date/Time: 1/30/06 1600
Relinquished By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Received By: [Signature] Company: MSL
Signature/Printed Name: [Signature] Date/Time: 01/31/06 1200
Received By: _____ Company: _____
Signature/Printed Name: _____ Date/Time: _____

Laboratory ID	Observations/Comments
	<u>Include frozen</u>

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527Sample No(s): 409-425Project Manager: Binsler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: _____

WP# _____

Yes

No

☐☐

Navy-type Project (requires high-level sample tracking procedures)

☐☐

Filter Samples:

Amount

Entire sample

Half of sample

☐☐

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)

☐☐

Special instructions: _____

Sample Preservation Instructions: _____

Date To Archive: _____

Date To Dispose: _____

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Was a custody seal present?

☐☐☒

Was the custody seal intact?

☒☐☐Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$?2.4 $^\circ\text{C}$

(if multiple coolers, note temp. of each)

 $^\circ\text{C}$ ☐☐☒Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?
Comment/Remedy: _____☒☐☐Were all chain of custody forms signed and dated?☐☒☐

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain): _____

Container type:

Teflon

Poly

Glass

Spex

Other: _____

Notes: _____

Completed By: [Signature]Date/Time: 03/30/06 1200

SAMPLE PRESERVATION

☒

Sample(s) were preserved at MSL

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs: _____

☐

Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:

☐0.2% HNO₃

Notes: _____

☐

0.5% HCl (Hg samples)

Notes: _____

☒

Refrigerate/Freeze

Notes: deep freeze B-2☐

Other

Notes: _____

Completed By: [Signature]Date/Time: 03/30/06 1430

ALPHA

CHAIN OF CUSTODY

PAGE 1 OF 1

WOODS HOLE, MASS.
WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

RAVENHAM, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: *Neufelds Env*Address: *100 Ledgewood Pl Suite 302**Rockland, MA 02370*Phone: *781-681-5040 x 109*Fax: *781-681-5048*Email: *chealegan@neufelds.com*☐ These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

*** Please contact Ted Healey @ Neufelds for info*

Project Information

Project Name:

Project Location:

Project #:

Project Manager:

ALPHA Quote #:

Turn-Around Time

☐ Standard☐ RUSH (only confirmed if pre-approved)

Date Due:

Time:

Date Rec'd in Lab:

ALPHA Job #:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL☐ ADEX ☐ Add'l Deliverables

Regulatory Requirements/Report Limits

State / Fed Program

Criteria

Billing Information

Same as Client info

PO #:

MAMCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?ANALYSIS
*** See Note*

SAMPLE HANDLING

☐ Filtration
☐ Done
☐ Not needed
☐ Lab to do
☐ Preservation
☐ Lab to do
(Please specify below)

Sample Specific Comments

TOTAL # OF SAMPLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials												
		Date	Time														
25274-409	GC-OR6-88-160-170	1/27/06		SED		X											
410	GC-OR6-88-180-190					X											
411	GC-OR6-88-200-210					X											
412	GC-OR6-88-220-230					X											
413	GC-OR6-88-240-250					X											
414	GC-OR6-88-260-270					X											
415	GC-OR6-88-280-290					X											
416	GC-OR6-88-300-310					X											
417	GC-OR6-88-320-330					X											
25274-418	GC-OR6-88-340-350					X											

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT
-MA MCP or CT RCP?

Relinquished By:

Date/Time

Received By:

Date/Time

Container Type
Preservative

A

INO. 07 10-00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms. See reverse side.



PAGE 1 OF 1

RAYNHAM, MA
TEL: 508-822-9300
FAX: 508-822-3288

on

7E20S ENV

Ledgewood Pl Suite 30 Project Manager:

1. NA 02370

81-5040 x 109

81-574-8

ley@newfields.com

have been previously analyzed by Alpha

Specific Requirements/Comments/Detection Limits:

contact Ted Healey @ Newfields for info

Sample ID

GC-0A6-87-160-170

GC-ORG-87-180-190

GC-OR6-87-200-210

GC-10RG-87-270-235

EN-086-87-247-277

67-36-330

GC-026-87-280-290

QUESTIONS ABOVE:

PROJECT

CT-05)

Date Rec'd in Lab:

Report Information - Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEX ☐ Add'l Deliverables

Regulatory Requirements/Report Limits

State /Fed Program	Criteria
--------------------	----------

MAMCPR PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

SAMPLE HANDLING

Filtration

☐ Doile

☐ Lab to do

Preservation

(Please specify below)

Sample Specific Comments

ANALYSIS

** see note

Container Type	A
Preservative	A

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be

logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527Sample No(s): 426-435Project Manager: Bing Lee

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: _____		WP# _____
Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Navy-type Project (requires high-level sample tracking procedures)
<input type="checkbox"/>	<input type="checkbox"/>	Filter Samples: <u>Amount:</u> <u>Entire sample</u> <u>Half of sample</u>
<input type="checkbox"/>	<input type="checkbox"/>	Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)
<input type="checkbox"/>	<input type="checkbox"/>	Special instructions: _____
Sample Preservation Instructions: _____		
Date To Archive: _____ Date To Dispose: _____		

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes	No	N/A	Indicate in Appropriate Box
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Was a custody seal present?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Was the custody seal intact?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$ or frozen? <u>2.9</u> $^\circ\text{C}$ (if multiple coolers, note temp. of each) <u> </u> $^\circ\text{C}$
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)? Comment/Remedy: _____
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Were <u>all</u> chain of custody forms signed and dated?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain): _____

Container type:

Teflon Poly Glass Spex

Other: _____

Notes: _____

Completed By: Bing LeeDate/Time: 05/16/06 1230

SAMPLE PRESERVATION

<input checked="" type="checkbox"/>	Sample(s) were preserved at MSL
<input type="checkbox"/>	Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
<input type="checkbox"/>	Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____
<input type="checkbox"/>	Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type: <input type="checkbox"/>	0.2% HNO ₃	Notes: _____
<input type="checkbox"/>	0.5% HCl (Hg samples)	Notes: _____
<input checked="" type="checkbox"/>	Refrigerate/ Freeze	Notes: <u>fridge lab 223</u>
<input type="checkbox"/>	Other	Notes: _____

Completed By: Bing LeeDate/Time: 05/16/06 1230



CHAIN OF CUSTODY

PAGE 1 OF 1

Project Information

Westborough, MA Raynham, MA Bedford, NH
TEL: 508-898-9220 TEL: 508-822-9300 TEL: 603-232-8247
FAX: 508-898-9193 FAX: 508-822-3288 FAX: 603-628-2241

Project Name:

Project Location:

Client: Newfields Environmental

Project #:

Address: 100 Ledgewood place Suite 302

Project Manager: Ted Healey

Rockland, MA 02370

ALPHA Quote #:

Phone: 781-681-5040 ext

Turn-Around Time

Fax: 781-681-5048

☒ Standard

☐ Rush (ONLY IF PRE-APPROVED)

Email:

☐ These samples have been previously analyzed by Alpha

Due Date:

Time:

Other Project Specific Requirements/Comments/Detection Limits:

Date Rec'd in Lab:

ALPHA Job #:

Report Information Data Deliverables

Billing Information

☐ FAX

☐ EMAIL

☐ Same as Client info

PO #:

☐ ADEX

☐ Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

SAMPLE HANDLING

☐ Filtration

☐ Done

☐ Not Needed

☐ Lab to do

☐ Preservation

☐ Lab to do

(Please specify below)

ALPHA Lab ID
(Lab Use Only)

Sample ID

Collection
Date Time

Sample
Matrix

Sampler's
Initials

Sample Specific
Comments

2527-426

GC-ORG-31-150-160

1/28/06

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GC-ORG-31-170-180

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GC-ORG-31-330-340

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PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT

MA MCP or CT RCP?

Relinquished By:

Container Type

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 2527

Sample No(s):

Project Manager:

Bingler

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: Sediment

WP# W75789

Yes

No

☐☒

Navy-type Project (requires high-level sample tracking procedures)

☐☒

Filter Samples:

Amount:

Entire sample

Half of sample

☒☐

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Lab# 130)

☐☒

Special instructions:

Sample Preservation Instructions:

Date To Archive:

Date To Dispose:

See Fims

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Was a custody seal present?

☐☐☒

Was the custody seal intact?

☐☒☐Was cooler(s) temperature(s) within acceptable range of $4 \pm 2^\circ\text{C}$ or frozen?
(if multiple coolers, note temp. of each)

22.2 °C

☒☐☐

Was Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)?

Comment/Remedy: sediments for age-dating do not require refrigeration.

☒☐☐

Were all chain of custody forms signed and dated?

7/5/06

☐☐☒

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Spex

Other:

Notes:

Completed By:

B. Bingler

Date/Time:

7/5/06 0915

SAMPLE PRESERVATION

☐

Sample(s) were preserved at MSL

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

If preservation necessary, record Acid Lot#

Type:

☐0.2% HNO₃

Notes:

☐

0.5% HCl (Hg samples)

Notes:

☐

Refrigerate/Freeze

Notes:

☐

Other

Notes:

Completed By:

Date/Time:



CHAIN OF CUSTODY

PAGE 1 OF 3

Project Information

Westborough, MA Rayham, MA Bedford, NH
TEL: 508-898-9220 TEL: 508-822-9300 TEL: 603-232-8247
FAX: 508-898-9193 FAX: 508-822-3288 FAX: 603-628-2241

Project Name: GOWANUS CANAL

Client Information

Project Location:

Client: Newfields Environmental

Project #:

Address: 100 Ledgewood Place, Suite 302

Project Manager:

Rockland, MA 02370

ALPHA Quote #:

Phone: 781-681-5040 ext 103

Turn-Around Time

Fax: 781-681-5048

☒ Standard

☐ Rush (ONLY IF PRE-APPROVED)

Email: smattigly@newfields.com

☐ These samples have been previously analyzed by Alpha

Due Date:

Time:

Other Project Specific Requirements/Comments/Detection Limits:

Date Rec'd in Lab:

ALPHA Job #:

Report Information Data Deliverables

Billing Information

☐ FAX ☐ EMAIL
☐ ADEX ☐ Add'l Deliverables

PO #:

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

SAMPLE HANDLING

Filtration
☐ Done
☐ Not Needed
☐ Lab to do
☐ Preservation
☐ Lab to do
(Please specify below)

RADIONUCLIDE

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
	GC-SED-01 (19-20)	✓ 12/19/05	1550	SED	
	GC-SED-21B (7-8)	✓ 1/9/06	1410	SED	
	GC-SED-88 (15.9-16.9)	✓ 12/14/05		SED	
	GC-SED-60B (6.8-8)	✓ 1/21/06		SED	
	GC-ORG-01-150-160	✓ 1/22/06		SED	
	GC-ORG-01-160-170	✓ 1/22/06		SED	
	GC-ORG-01-170-180	✓ 1/22/06		SED	
	GC-ORG-01-180-190	✓ 1/22/06		SED	
	GC-ORG-01-190-200	✓ 1/22/06		SED	
	GC-ORG-01-200-210	✓ 1/22/06		SED	

PLEASE ANSWER QUESTIONS ABOVE!

Container Type	Preservative
A	A
A	A

Relinquished By:

Date/Time

Received By:

Date/Time

IS YOUR PROJECT
MA MCP or CT RCP?

FORM NO. 01-07 Internal
(rev. 12 April-05)

Please print clearly, legibly and completely. Samples can not be logged in and start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

TOTAL # BOTTOM LINES



CHAIN OF CUSTODY

PAGE 2 OF 3

Westborough, MA Rayham, MA Bedford, NH
TEL: 508-898-9220 TEL: 508-822-9300 TEL: 603-232-8247
FAX: 508-898-9193 FAX: 508-822-3298 FAX: 603-628-2241

Project Information

Project Name: GOWANUS CANAL

Client Information

Project Location:

Client: Newfields Environmental

Project #:

Address: 100 Ledgewood Place, Suite 302

Project Manager:

Rockland, MA 02370

ALPHA Quote #:

Phone: 781-681-5040 ext 103

Turn-Around Time

Fax: 781-681-5048

☒ Standard

☐ Rush (ONLY IF PRE-APPROVED)

Email: smattngly@newfields.com

☐ These samples have been previously analyzed by Alpha

Due Date:

Time:

Other Project Specific Requirements/Comments/Detection Limits:

Date Rec'd in Lab:

ALPHA Job #:

Report Information Data Deliverables

Billing Information

☐ FAX

☐ EMAIL

☐ Same as Client info

PO #:

☐ ADEX

☐ Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes

☐ No

Are MCP Analytical Methods Required?

☐ Yes

☐ No

Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

SAMPLE HANDLING

Filtration

☐ Done

☐ Not Needed

☐ Lab to do

☐ Preservation

☐ Lab to do

(Please specify below)

RADIONUCLIDE

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	RADION											Sample Specific Comments	
		Date	Time															
	GC-ORG-01-210-220	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2537-446	1
	GC-ORG-01-220-230	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	447	1
	GC-ORG-01-230-240	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	448	1
	GC-ORG-01-240-250	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	449	1
	GC-ORG-01-250-260	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	450	1
	GC-ORG-01-260-270	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	451	1
	GC-ORG-01-270-280	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	452	1
	GC-ORG-01-280-290	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	453	1
	GC-ORG-01-290-300	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	454	1
	GC-ORG-01-300-310	✓ 1/22/06		SED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	455	1

PLEASE ANSWER QUESTIONS ABOVE!

Container Type	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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PLEASE ANSWER QUESTIONS ABOVE!

Container Type	Preservative	Date/Time		Received By:		Date/Time	
A	A	-	-	-	-	-	-
A	A	-	-	-	-	-	-

IS YOUR PROJECT

MA MCP or CT RCP?

Relinquished By:

Date/Time

Received By:

Date/Time



CHAIN OF CUSTODY

PAGE 2 OF 3

Project Information

Westborough, MA Raynham, MA Bedford, NH
TEL: 508-898-9220 TEL: 508-822-9300 TEL: 603-232-8247
FAX: 508-898-9193 FAX: 508-822-3288 FAX: 603-628-2241

Project Name: GOWANUS CANAL

Project Location:

Project #:

Project Manager:

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Email: smattngly@newfields.com

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Date Rec'd in Lab:

ALPHA Job #:

Report Information Data Deliverables

☐ FAX ☐ EMAIL

☐ ADEX ☐ Add'l Deliverables

Billing Information

PO #:

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☐ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

SAMPLE HANDLING

- ☐ Filtration
- ☐ Done
- ☐ Not Needed
- ☐ Lab to do
- ☐ Preservation
- ☐ Lab to do
- ☐ (Please specify below)

RADIONUCLIDE

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	RADIO																	Sample Specific Comments
		Date	Time																				
	GC-ORG-01-310-320	✓	1/22/06	SED		☒	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8523-456	1	
	GC-ORG-01-320-328	✓	1/22/06	SED		☒	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1-457	1	
	GC-ORG-21-150-160	✓	1/24/06	SED		☒	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4-458	1	
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